DECEMBER, 1957

American Engineer

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- **Motivating Engineers in Industry**
  By
  Dr. Robert S. Bell, President,
  Packard-Bell Electronics Corporation

The Project Team—Engineers Working Together

Dr. Robert S. Bell

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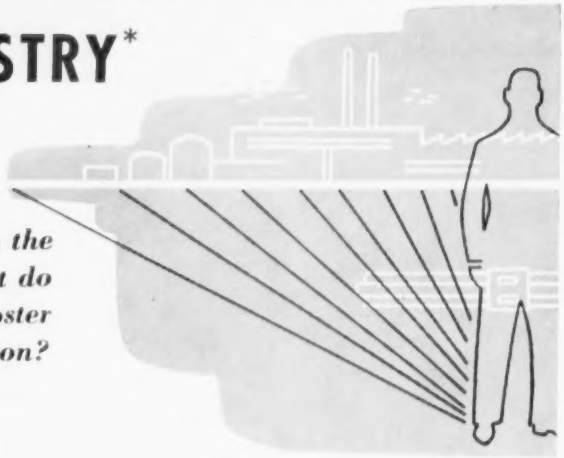
On 'Sounding Off' or a Technique for Teaching Engineers Citizenship. By Morris L. Cooke, P.E., Consulting Engineer

● *A Symposium:* Professional Development of the Young Engineer in Private Practice ● Engineers' Week News ● 1958-59 Nominees for NSPE Office Announced

Season's Greetings

Executive Research Survey Report

CAREER SATISFACTIONS of PROFESSIONAL ENGINEERS IN INDUSTRY*



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American Engineer

DECEMBER

1957

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Leave the beaten track occasionally and dive into the woods. You will be certain to find something you have never seen before.
— Alexander Graham Bell

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Letters to the Editor

The Individual and Unity . . .

Dear Editor:

In connection with the material published in the October issue on the AIEE proposal for unity of the engineering societies, letters to the editor were invited.

I would like to point out that the rate of growth of NSPE encourages one to think that the search for "unity," i.e., a general society representing the whole profession in matters common to engineers of all branches, could be resolved by the action of engineers joining NSPE. Perhaps if such a general society of, say, 100,000 members were on the scene there would be no further searching. If engineers, acting individually, choose to resolve the search in this way the choice is open to them.

In this connection, the proposal by AIEE that NSPE open its membership to non-licensed engineers suggests a way to extend the choice to all engineers. I wish to point out, however, that recognition of a profession by the public implies a means for public identification of its members. This indicates the importance of the license by state boards of examiners as a qualification for membership in the general society of a publicly recognized profession. Of course, for engineers who believe that recognition only within the fraternity of engineers is sufficient, this is beside the point.

But public identification of the membership is an essential foundation for a public profession and for its general society. However, this may not mean that NSPE, adhering to this foundation, could not for the present admit non-licensed engineers. A survey by AIEE of its membership to see how many such members would choose to join NSPE might in itself show the way to end the search. Supported by similar surveys by other societies, the results could be significant indeed.

AIEE is proposing that engineers need to belong to two societies: one scientific and educational in a branch of engineering, and the other a general society of the profession as a whole. Under Internal Revenue classifications one would be a 501-C-3 society and the other a 501-C-6 society. Societies of the first classification at least would be members of EJC as a coordinating body, of ECPD as a body responsible for engineering education, and those who share property and other assets would be members of UET. Thus all existing societies would have a clear place.

The idea of the need for membership in two such societies has not been brought to the attention of engineers with such force before. Nor has the way to resolve the search for unity by decision and action by engineers acting individually been pointed out so forcefully.

Furthermore, AIEE proposes to provide the basis for harmonious cooperation between all societies opening the way to whatever degree of total unity the distant future may call for.

An apparent advantage of the two society idea is concentration of purpose, as well as independent strength, for each society. For example, I believe advancement of the science and art of electrical engineering depends upon AIEE. With AIEE an independent body this advancement is not secondary to any broader purposes. The proposal that electrical engineers should join a second society for broad professional, non-technical purposes protects this concentration of purpose. The importance of this is in view of the magnitude of the general society's work (about equal in cost per member with AIEE).

Finally, AIEE proposes the development of a general society, specifically NSPE, based (as NSPE is) on individual membership, financial strength, and ability to act at county, state, and national levels.

Consideration for the present state of intersociety relations is necessary. This state has developed in the absence of such a general society with a broad membership. So the societies have acted individually and jointly to provide the broad functions. Thus they have developed functions which cannot be changed unless transition is possible to an adequately broad society.

Therefore, it is evident that NSPE with 100,000 members, more or less, would be a conclusive factor. Engineers can make it so if they choose and NSPE can encourage them by aiming and acting in the interests of all. It may come faster if non-licensed engineers choose to ask NSPE to make a place for them.

Undoubtedly many engineers now regard NSPE as conducting its affairs from the view of the profession of engineers in direct public practice rather than from the view of the profession in its entirety. Since the breadth of view of a society is in proportion to the breadth of its membership, engineers should realize that if they choose to act favorably on the AIEE proposal they will bring to NSPE the breadth a general society needs to have. I believe all engineers should view the AIEE proposal as especially addressed to them individually.

T. M. Linville, P. E.,
Schenectady, N. Y.

On the Coover Plan . . .

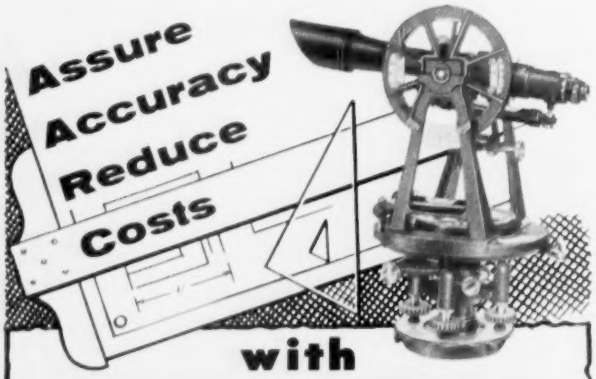
Dear Editor:

In one of the recent issues of the American Engineer you requested members to send you comments on the new alignment of technical and professional societies as suggested by Professor M. S. Coover, recent president of AIEE. Enclosed herewith is a copy of a letter I wrote to President Coover last July endorsing his suggestions.

"I read, with much interest, your letters to the AIEE members in *Electrical Engineering* for June and July. I am in general agreement with your recommendations. I note that the editor of *Electrical World*, in a recent editorial, calls for a referendum of AIEE members on this subject. There may be considerable question as to whether such a referendum is necessary.

"Like many AIEE members, I have for many years urged that AIEE should look after the professional, as well as, the technical interests of its members, at least until someone else seemed able and willing to look after the professional interests in a truly professional manner. I believe that the NSPE is doing an excellent job along professional lines and recently I became a member of that organization. NSPE has the advantage of having a large membership and of including the other engineering professions.

"Many of us oppose any over-all organization of engineers which would be compulsory or which would make membership essential to the practice of the profession. No private organization should have that much authority or responsibility. Some of the troubles of the American Bar Association and the American Medical Association have been due to the fact that they tried to make membership a requirement for practicing a profession and to set up standards which should only be set up by agencies of the Government. Labor unions have come still further with a closed shop idea and such a



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concentration of power always results in abuses, such as have come to light recently.

"It would seem that the plans you and the AIEE Board of Directors have recommended have some very considerable advantages.

1. Maximum use is made of existing organizations. The ordinary engineer and, particularly the young engineer, would need to belong to only two societies, a technical society and a professional society.
2. Each one of the two groups can do a better job separately because their objectives are so entirely different.
3. The role assigned to ECPD and the EJC should be satisfactory with those organizations and should give them added support from AIEE members.
4. The recommended plan avoids the dominance of an over-all organization which, if it included substantially all engineers, would tend to develop into a conservative, bureaucratic, and restrictive organization.
5. The AIEE will always need the membership and support of large employers.
6. It will be easier to enlist that support if problems relating to the welfare of the individual engineer were handled by an organization like the NSPE which is composed of professional engineers and others who are extremely interested in the welfare of individual engineers.

"All in all, I think the decision of the AIEE Board as outlined in your letters is very sound and helpful."

E. E. George, P. E.,
Little Rock, Ark.

The D. C. Case . . .

Dear Editor:

It is unfortunate that the District of Columbia case involving the legality of engineering corporations was brought up in a Tax Court, whereby the registered engineer plaintiffs were forced into the position of contending that engineering is "a trade or business which by law, customs, or ethics cannot be incorporated." However, it is gratifying to note that the judge classified engineering as a profession. Based entirely upon the article in the October issue of the American Engineer it appears that the law of the District of Columbia, as construed in the Potomac engineers' case, precludes the issuance of a registration certificate to a corporation and that in the present case this construction has been expanded to mean that registered personnel cannot incorporate.

If this decision is upheld and becomes established as a principle of law it will be most unfortunate for the public who, as clients of the respective engineers, have a very considerable interest in the stability of the organization whom they engage. Whether a project be large or small, reference to the basic data used in the design, computations, and drawings are frequently made many years later. In numerous cases of my own knowledge, where the design was the work of an individual practitioner, his heirs failed to realize the value of his records and destroyed them, the client lost his copies in one way or another, and there is no record existent. Even partnerships are less stable than corporations and while they are a more customary form of professional organization they are certainly no more ethical.

While I agree that corporations should not be registered per se, I believe that registered engineers together with registered surveyors and architects should be permitted to incorporate, particularly if the statute provides that all officers and directors shall be registered persons.

W. B. Williams, P. E.,
Grand Rapids, Mich.

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PROFESSIONAL NEWS IN CAPSULE FORM

A Roundup of Late Events for Professional Engineers

A. G. Cochran Named Association President

A. G. (Ted) Cochran of Columbus, Ohio, has been named president of the Clay Sewer Pipe Association, Inc.

The Clay Sewer Pipe Association, which Mr. Cochran now heads, operates in the seventeen states north of the Ohio River and east of Indiana, as a non-profit organization, designed to develop and promote the proper use of vitrified clay pipe and related clay products. The regional organization, with headquarters in Columbus, is a member of the National Clay Pipe Manufacturers, Inc., of Washington, D. C. Mr. Cochran is a NSPE member.

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Pope Pius XII Speaks to Road-Building Engineers

His Holiness Pope Pius XII, speaking to a group of road building engineers in Castelgandolfo, Italy, expressed the hope that modern roads "may promote the exchange of material, intellectual, and spiritual goods among European cities."

Addressing 1,300 delegates to an international congress on cement road construction, the Pontiff said:

"If Roman roads once made it possible for Christian truth to penetrate more deeply into the regions of western Europe, today's roads, incomparably more beautiful and more practical, have an equally necessary function to fulfill for the benefit of mankind today.

"It is a vain hope to expect the western nations to maintain a peaceful and lasting collaboration solely on the basis of economic treaties or political military agreements. It is first of all necessary that the intentions should aim at achieving the true welfare of mankind, which only Christian faith can fully reveal and make possible.

"May modern roads like those of ancient times be open to the bearers of truth who answer the anxiety of the present times and point out the road of salvation.

"May the modern roads promote the exchange of material, intellectual, and spiritual goods among European cities and help them preserve the consciousness of their mutual responsibilities while safeguarding peace and Christian culture."

"Dear Sir: I wish to take this opportunity to thank you for the chance to do business with a firm like yours. I have nothing but admiration for your engineering ability, which has allowed you to set aside such a sizeable nest egg."

66 Speakers to Address Engineering Conference

Sixty-six speakers, drawn from twenty-two states, the District of Columbia and Canada, will address the twenty-five sessions of the Plant Maintenance & Engineering Conference at Chicago in January. The group represents the broadest cross-section of engineering opinion, both from the standpoint of geographical distribution as well as industrial background, ever invited for this meeting.

It will be held during the first three days of the Plant Maintenance & Engineering Show, which is scheduled for the International Amphitheatre, Chicago, January 27-30.

NEW! The Practical Guide to . . .

Basic Soils Engineering

B. K. HOUGH. This is the first book to reflect many of the developments in soils engineering procedures and equipment made during and immediately after World War II. Offering expert guidance, book interrelates the fields of structural foundations, earthworks, highway and airfield engineering. Discusses the development of osmotic pressure in clays and its effect on soil structure and compressibility; explains a new theory for the migration of water into zones of freezing. Clarifies the distinction between solid and viscous friction effects in soils generally, and of rupture theory for clays. **227 ills., tables; 513 pp. $8**

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AEC Fellowship Program Revised for Graduates

In order to meet the increasing demand for highly-trained scientists and engineers in nuclear fields, the Atomic Energy Commission has broadened one of its special fellowship programs to include study through the doctorate level.

Fellowships, to be known as the "AEC Special Fellowships in Nuclear Science and Engineering," have been established to provide a total of 150 fellowship grants on a one-year basis to first, second and third-year graduate students.

The fellowships carry basic stipends of $1600, $1800 and $2000 respectively, with additional allowances for dependents, tuition and travel. The original program, at that time called "AEC Special Fellowships in Nuclear Energy Technology," was announced on October 30, 1956, and supported one year of study at the first-year graduate level.

The revised program is the result of the increased demand for scientists and engineers with more advanced training in nuclear technology and provides the opportunity for a large number of graduate students to pursue, at certain universities, studies in the nuclear aspects of conventional scientific and engineering disciplines in addition to basic work in the reactor technology field.

Applications are open to graduates in chemistry, engineering, mathematics and physics. Application forms may be obtained from the University Relations Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tennessee.

1958 Winter General Meet Of AIEE, February 3-7

Because of the number of technical sessions and committee meetings, the American Institute of Electrical Engineers will utilize both the Hotel Statler and the Sheraton-McAlpin Hotel in New York for its 1958 winter general meeting, which will be held February 3-7, it has been announced by D. M. Quick, general chairman.

Forty-two committees of the six technical divisions and several general committees of the world-wide Institute are sponsoring ninety-six sessions and symposia, in which is described as the most comprehensive survey of electrical engineering developments since AIEE was formed seventy-four years ago. More than 5,000 are expected to attend.

Young Hungarian Engineer Surprised at America

At Pratt Institute, Maria Dikany, age nineteen, enjoys two distinctions: she is one out of five Hungarian refugees who have won 4-year scholarships, and she is one out of seven women registered this year at the School of Engineering.

Maria was astonished when told that seven women is an unusually high percentage in American engineering schools. "More than half the engineers in my country are women," she reports. "Everybody with eighty per cent marks in high school gets a scholarship, and the technical education is encouraged." She adds, "Almost all students are workers and peasants. The state discriminates against the children of intellectuals, who are obliged to stay in the top one or two per cent if they are to earn a scholarship. My father is considered 'intellectual'. He is an engineer."

Report Writing Guide Now Made Available

A concise and practical guide to professional, technical and adminstrative personnel who want to get their thoughts on paper faster, more easily and more understandably is now available in *A Guide to Effective Report Writing*, a booklet published by Industrial Relations News.

The Guide is designed particularly to meet the needs of personnel whose technical or professional training left little time for developing skill in effective communication, as well as for the secretary or typist responsible for turning out an attractive finished product.

The Guide can be obtained from Industrial Relations News, 230 West 41st Street, New York 36, N. Y., at $1.50 a copy.

MEETINGS Of Note

American Society of Mechanical Engineers—Annual Meeting, December 1-6, Statler Hotel, New York, New York.

American Rocket Society — Annual Meeting, December 2-5, New York, New York.

American Society of Agricultural Engineers—Winter Meeting, December 8-11, Edgewater Beach Hotel, Chicago, Illinois.

American Institute of Chemical Engineers—December 8-11, Conrad Hilton Hotel, Chicago, Illinois.

American Association for the Advancement of Science — Annual Meeting, December 26-31, Indianapolis, Indiana.

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H. A. Kuljian Speaks at Naturalization Ceremony

More than 400 immigrants took their places among the ranks of American citizens in a gigantic naturalization ceremony sponsored by the Philadelphia Bar Association and the Association of Immigration and Nationality Lawyers recently in Temple University's Mitten Hall. U. S. Judge George A. Welsh presided.

A naturalized citizen, Harry A. Kuljian, president of The Kuljian Corporation, an international engineering and construction firm, in Philadelphia, was the principal speaker. He drew upon his own experiences to point up the opportunities for immigrants in this country.

Mr. Kuljian, a member of the National Society, was born in Armenia, came to the United States in 1911 at the age of 16, and was naturalized in 1925. On his arrival here, he had little formal education, but by working and attending school at the same time, he graduated from high school and went on to receive a B. S. degree in engineering from Massachusetts Institute of Technology.

ASHAE Annual Meeting Planned January 27-29

Symposiums, a topical session, and outstanding papers of timely interest form the substance of the technical sessions planned for the sixty-fourth annual meeting of the American Society of Heating and Air-Conditioning Engineers, January 27-29, 1958, in Pittsburgh, Pa., at the Penn-Sheraton Hotel. In addition the Council and various committees will meet between January 25-29 with the organization meeting of the 1958 Council on Thursday, January 30.

The traditional introduction and installation of the 1958 officers and the presentation of the Past President's Award are among the highlights of the annual banquet which will take place on Wednesday evening, January 29.

U. of Cincinnati Offers Graduate Health Courses

The Institute of Industrial Health, University of Cincinnati, is offering graduate training for professional personnel other than physicians, in the field of environmental hygiene (industrial hygiene, air pollution, industrial wastes, industrial toxicology, etc.). The professional training is provided for graduates of approved schools of engineering or science.

A three-year course of instruction leading to the degree of doctor of science in industrial health, devotes two years to intensive academic study, and a third to the preparation of a thesis (additional practical work may be required as indicated).

A one-year course is also offered to qualified applicants who may also be candidates for the master of science degree.

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Patent Examiner Posts Open in Washington, D. C.

A new examination for filling Patent Examiner positions located principally in the Patent Office in Washington, D. C., has been announced. The entrance salaries range from $4,480 to $12,900 a year.

To qualify, all applicants must have had appropriate education or technical experience in the fields of engineering, physics, or chemistry. For positions paying $5,335 and above, appropriate professional experience in the field of patent law is also required. Certain substitutions are allowed for the professional experience.

Applications will be accepted by the Board of U. S. Civil Service Examiners, United States Patent Office, Washington 25, D. C.

ACI Annual Convention Scheduled at Chicago

The annual convention of the American Concrete Institute will be held February 24-27, 1957, at the Morrison Hotel, Chicago, Ill. This fifty-fourth meeting of ACI will enjoin many varied discussions on the technical aspects of concrete and concrete construction according to A. Allan Bates, vice president of the Portland Cement Association and general chairman of the Chicago convention committee.

One full day, Monday, February 24, will be devoted to "working sessions" of ACI technical committees. Tuesday will feature two general sessions,one on proposed ACI Standards, the other on the construction of the St. Lawrence Seaway.

Wednesday, February 26, will see concurrent sessions on fatigue of concrete, concrete construction, structural design, and the design and construction of highway pavements.

The annual research session will headline the activities on Thursday with a tour of the Portland Cement Association laboratories topping off the day.

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ASEE College-Industry Conference, Jan. 30-31

"New Concepts in the Education and Development of Technical Manpower" is the theme of the 1958 College-Industry Conference of the American Society for Engineering Education which is to be held at the University of Michigan, Ann Arbor, Mich., January 30 and 31.

Four speakers are scheduled to present the new concepts arising from current research: Paul Reinert, president of St. Louis University, will speak on "New Concepts in Education from the President's Committee on Education Beyond High School;" Andrew A. Kucher, vice president of Engineering and Research for the Ford Motor Company, will have "New Concepts in Engineering" as his topic; Donald C. Pelz, University of Michigan Survey Research Center, "New Concepts Useful in Motivating Engineering and Technical Personnel," and Lee Danielson or John W. Riegel, U-M Bureau of Industrial Relations, "New Management Concepts Obtained Through Interviews with Employed Engineers and Technicians."

Four additional speakers will describe new programs designed by their companies to utilize new concepts of professional development: W. R. Collings, president of Dow-Corning Corporation; E. E. Sivacek, chief engineer, King-Seeley Corporation; A. L. Bain, superintendent of Engineering Training for Western Electric Company; L. V. French, director of engineering personnel for Whirlpool-Seeger Corporation. These reports hold many implications for education as well as for employers of engineers. Several other features are in the process of being arranged.

Registration will be held from 8:30 to 10:00 a. m., January 30. Those attending will be welcomed by William Stirton, vice president of the University of Michigan.

Civil Service Commission Authorizes Engineer Ads

The Civil Service Commission in Washington, D. C., recently authorized Federal agencies to use paid advertising for recruitment of engineers and scientists.

There has been a long-standing policy against the use of paid ads. Now help-wanted expenditures will be allowable from the appropriations of each agency.

Season's Greetings

The pathway to glory and man's success
Is paved with friendship and thoughtfulness
Heavenly thoughts of kindness and cheer
Ring out Merry Christmas and Happy New Year
Earthly pleasures and personal gain
Bow to a season of charity's reign
Professional men in freedom's clime
Look with joy to Christmas time.
Reverence and cherish our good heritage
Mellowed with thoughts of the yesterage.
Ordained to promote and protect mankind
By solid planning and advanced design
Fraternity born of mutual esteem
Each helping the other to realize a dream.
Energetic and striving success to gain
And ethical standards promote and maintain
Success is assured to the tireless who
Aid and assist the less fortunate few
Service to man and community
Is a source of pride and security
Industrial might and commercial strength
Are of our planned environment
Observance to progressive thought
By which most worthwhile gains are wrought
National pride and man's estate
Are the fortunes we anticipate.
Allegiance to flag and to country
Is the essence of strength in society
Loyal to noble purpose in life
Dedicated to man to alleviate strife.
Engineers look to the coming year
With new faith and pride in their chosen career
Neighbors will notice across the land
New confidence in the professional man
Grateful for faith in free enterprise
And a newness of purpose to strengthen our ties
Influence and stature we strive for each day
And hope to attain the professional way
Noble objectives we strive to achieve
While friction to progress we try to relieve
Endowed with the elements of success
And a vast reserve of resourcefulness
Enlightened by wisdom, understanding, and knowledge
Born of ambition, faith and courage
Realistically weighing our own limitations
And working to gain good public relations

Sincerely evoking this message of cheer
Merry Christmas to you and a prosperous year.

Russell M. Jenkins, P. E.,
Vice President & Director of Public Relations,
Pittsburgh Chapter—PSPE

Title Violation Ruled in Texas

A manufacturing business which uses the term "Engineering" in its corporate title and whose members are not registered professional engineers has been held to violate the Texas Engineering Registration Act. This ruling was handed down in an opinion by the State's Attorney General.

The opinion was in response to the following question: "Do the provisions of the Texas Engineering Registration Act apply to the owners of a corporation which uses the term 'Engineering' in its corporate title, where the corporation is engaged in the manufacturing business and does not hold itself out to the public as being available to render engineering services? Section 1 of the Texas statute declares that ***it shall be unlawful for any person to practice or offer to practice the profession of engineering in the State or to use in connection with his name or otherwise assume, use, or advertise any title or description tending to convey the impression that he is a professional engineer unless such person has been duly registered or exempted under the provisions of this Act."

According to the Attorney General, this section prohibits a person from practicing or offering to practice the profession of engineering in Texas without being duly licensed, and also prohibits the use of any title or description tending to convey the impression that he is a professional engineer.

Concluding that any company or organization which uses the word "engineering" in its title and whose members have not qualified under the Act is in violation of the statute, the Attorney General declared: "We are of the opinion that the word 'engineering' in the title of the *** Company clearly gives the impression that this organization is qualified to render engineering service. To convey such an impression by its name is in direct violation of Section 1. In effect, we are of the opinion that any company who uses the word 'engineering' in its title and whose members have not qualified under the Act is in violation of the Act."

Robbins, Dyer Attend Meetings

NSPE Executive Director Paul H. Robbins spoke at two conferences in November on more effective utilization of engineers and scientists — a New England Conference at Boston, Mass., and a Colorado Conference at Denver.

In addition, he also addressed the Minneapolis-Honeywell Engineers' Club, the M.I.T. Alumni Club of Toledo, Ohio, the Toledo Chapter of the Ohio SPE, and spoke on "The Search for Creative Leaders in Industry" in a forum being sponsored by Cooper Union.

Mr. Robbins and NSPE President Garvin H. Dyer attended the annual meeting of the Engineers' Council for Professional Development and the 4th general assembly of EJC in New York and also the annual meeting of the National Council of State Boards of Engineering Examiners at Atlanta, Georgia.

Alabama Society of Professional Engineers—Annual Meeting, December 7, 1957, Birmingham, Alabama.

North Carolina Society of Professional Engineers — Annual Meeting, January 9-11, 1958, Robert E. Lee Hotel, Winston-Salem, North Carolina.

Idaho Society of Professional Engineers—Annual Meeting, January 16-18, 1958, Hotel Boise, Boise, Idaho.

Wisconsin Society of Professional Engineers—Annual Meeting, January 17-18, 1958, Hotel Schroeder, Milwaukee, Wisconsin.

Texas Society of Professional Engineers—Annual Meeting, January 23-25, 1958, Blackstone Hotel, Tyler, Texas.

Oklahoma Society of Professional Engineers—Annual Meeting, February 7-8, 1958, Skirvin Hotel, Oklahoma City, Oklahoma.

NSPE Spring Meeting—February 15-16, Kellogg Center, Michigan State University, East Lansing, Michigan.

Minnesota Society of Professional Engineers—Annual Meeting, February 19-21, 1958, Nicollet Hotel, Minneapolis, Minnesota.

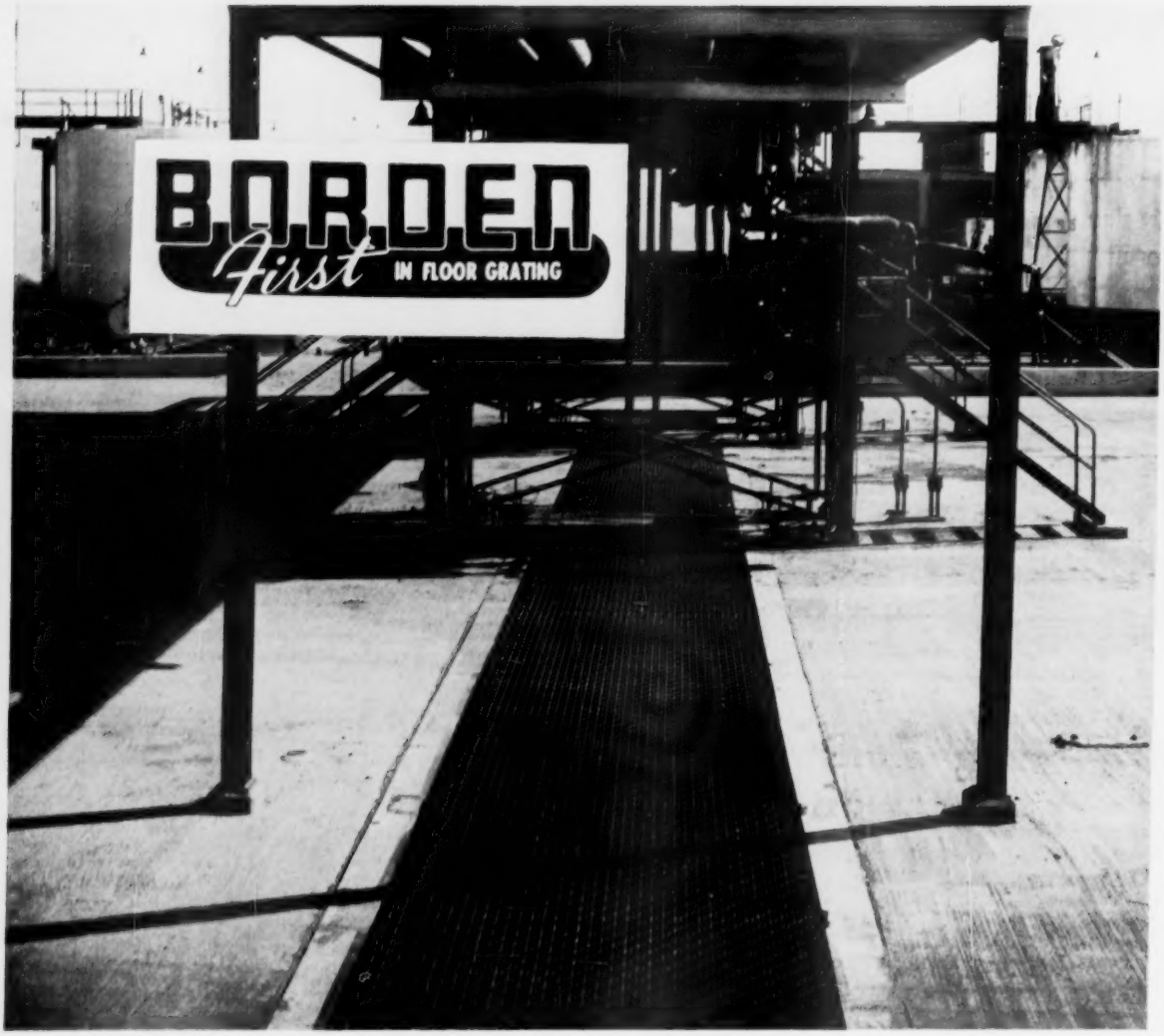
Tennessee Society of Professional Engineers—Annual Meeting, February 21-22, 1958, Peabody Hotel, Memphis, Tennessee.

New Mexico Society of Professional Engineers—Annual Meeting, February 22, 1958, La Fonda Hotel, Santa Fe, New Mexico.

Iowa Engineering Society — Annual Meeting, February 25-26, 1958, Hotel Ft. Des Moines, Des Moines, Iowa.

Kansas Engineering Society—Annual Meeting, February 27-March 1, 1958, Jayhawk Hotel, Topeka, Kansas.

NSPE Annual Meeting—June 11-14, 1958, Chase-Park Plaza, St. Louis, Missouri.



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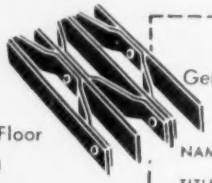

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(Circle 7 on Inside Back Cover)

American Engineer

The Magazine of the Registered Professional Engineer

VOLUME TWENTY-SEVEN, NUMBER 12

Motivating Engineers in Industry

By

DR. ROBERT S. BELL.

President, Packard-Bell Electronics Corporation, Los Angeles, California

Environmental testing . . . at the Packard-Bell engineering laboratories. Part of the engineering team at work.

A SATIRIST might portray today's engineer as a walking digital computer with high speed input and output devices and complete with no judgment. Or, in a more allegorical vein, as a modern Paul Bunyan, striding above the multitude in seven league boots, head in the clouds, arms extended, one hand reaching for gold, the other for glory.

Outside the industry there is a popular conception of America's newest hero; the man of science. He is civilization's saviour, battling the unknown and untried, armed with some mysterious seventh sense and a slide rule. Moreover, so it is believed, he is a strange breed, living in a world of his own, high on a pedestal. Sought after. Pampered. Honored. Envied.

The truth is, of course, that in our industry engineers are in fact sought after, sometimes pampered, occasionally honored, but too often their potential is reduced or stifled and their basic motivation misunderstood.

When Packard Bell was founded in 1926 engineers were plentiful, or perhaps more correctly, the need was limited. A radio engineer who stayed two years at the same place considered that he had had a career and leaving was seldom by his choice. Length of employment for engineers averaged a remarkably short time. An engineer hired to design a radio circuit suspected that his job would end when the task was completed. One might say that engineering in the infant radio industry was not a habit-forming occupation. There was little gold and, as yet, no glory.

It was under these circumstances that H. A. Bell, the founder and present chairman of the board of Packard Bell, instituted what has proved to be a far-sighted and stimulating creed for employee motivation. It is this creed, as it has been empirically developed and as it applies specifically to engineers, that could be used as a powerful incentive for growth and a source of loyal support from those who comprise the might of the electronics industry.

Briefly, the creed is as follows:

1. **Remain compact, regardless of size.**
2. **Work in small groups where the lack of size will focus attention upon the individual so that his talent, or lack of it, can be recognized.**
3. **Encourage talent by "from the ranks" promotions.**
4. **Demonstrate management strength by delegating authority as well as responsibility.**
5. **Urge civic and professional society activity and insist upon personal responsibility and loyalty to company and supervisor.**
6. **Develop enthusiasm for joint effort and reward sharing the load with sharing the profits.**

Let's look at the details of these points.

Policy Number One

Remain compact, regardless of size.

Back when the twenties were roaring toward fiasco and the radio industry was a pup, it was easy to remain compact. Packard Bell, like other struggling beginners, operated as a family business because that's what it was. Today, after thirty years of growing from a garage operation to a multi-million dollar institution with four autonomous divisions and two affiliates, it's still a family operation. The only difference is that the family now has some 2,000 working members and ownership is vested in over 4,000 stockholders.

Much has been said and written about so-called "business families." Often the family relationship idea is a figment of management's imagination with the only paternal impulse demonstrated at the top, chiefly at Christmas time, with very little filial acknowledgement from the ranks.

Every father knows that respect for parenthood is a reward, not an obligation. Likewise, respect for management in a business family sense is never inherent. It must be earned. No one has all the answers to this rather nebulous problem but there are a few things we do here to make the working atmosphere more comfortable, comradely and constructive. Here are some "for instances."

To be comfortable, shirt sleeves are the uniform of the day, every day, at Packard Bell from top executives down through supervisory levels. To be comradely, we recognize that everyone has a first name and is addressed by it. To be constructive, we are aware that communication between levels and individuals presents a complex problem in an organization of our size; yet we have to realize that efficiency and its blood brother, economy, are based on complete knowledge and understanding of any given situation.

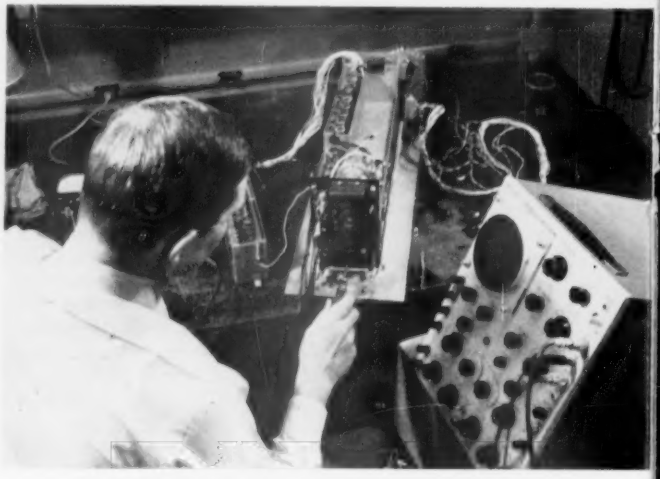
Lack of communication, lack of comprehension of what the other man is thinking and planning and doing can cause a major disaster resulting from suspicion, ignorance, and conflict: personality-wise and policy-wise. To achieve harmony, we have established certain means of communication, written and spoken, so that no one is ever in doubt about what is currently going on, what has been done and what is planned for the future.

Our written means of communication include several types of internal publications, geared to the interests of different levels. In addition to a handsome monthly house organ called *The Printed Circuit* which is issued to all the employees of the company, there is a "Management News Letter," circulated among those on a supervisory plane. Bulletin boards are used extensively by anyone with something worth-while to communicate. Copies of news releases are distributed so that all may know we have interesting information to share with the world *before* they read it in the press. Proofs of our advertisements are posted on the bulletin boards and all new Packard Bell publications receive wide distribution within the plant.

In addition to the written report, we place much emphasis on the spoken word in the informal "bull session" or "brainstorming" type of staff meetings, conducted on diverse levels. Once a week four or five new employees (from engineers to assembly line workers) meet with several older ones and the management staff at a "get acquainted" luncheon. Anything and everything is discussed except business. They leave the luncheon with a pretty good idea of what makes the other person tick and the next time they meet in line of duty, they have background material to draw on.

Weekly staff meeting . . . Left to right: Grover Rogers, division cost accountant; Hugh L. Vick, chief, Sales and Contracts Administration; Richard B. Leng, vice president in charge of the Technical Products Division; and Dr. George J. Mueller, director of engineering.

Packard-Bell professional engineers working up vital cost estimates.



Technician conducting electrical test . . . engineering laboratories.

Staff discussions are held from time to time among those on various supervisory stages within each division to explore immediate plans and iron out knots and kinks.

Once a month a meeting of supervisors is conducted by each division of the company, at which time the current status of business is spelled out in detail. These people then go back to their groups and spread the word. "Too much backlog." "Have to speed up." "Profits are slipping." "Have to trim costs." Or, "We're doing fine." "Keep it up." "Looks like a bigger profit sharing than ever this year."

At the end of every six months the president's report is delivered at a dinner meeting to all supervisors and senior engineers of all divisions. This, too, is a cold turkey exposé. Profits, prospects and forecasts are blueprinted for these men, who have come to realize that everyone present is a partner in the business as well as a stockholder. Each is as important and as necessary as anyone else. He belongs to the family in fact, not in name only, and shares in it mentally, spiritually and financially.

A well-informed employee is a responsible and authoritative employee.

Policy Number Two

Work in groups to focus attention upon the individual.

Packard Bell's transition from an established commercial industry to a balanced commercial-military industry would have encountered far more severe growing pains if it had not been for this policy of group effort and individual recognition. When brainpower is your chief raw material, and it's scarce, a little often has to go a long way. You need an "engineer stretcher" and there is such a device, built-in. It's called "ambition."

Fundamentally, the motivating of engineers to highest effort is a matter of providing scope and encouragement for personal and professional growth while guaranteeing a firm foundation of financial security.

Today engineers are enjoying a unique and unprecedented situation. They have not always been accepted as red-blooded American professionals in the true definition of the word and until recent years the world did not precisely come clamoring to their homes and beating on the doors for their services. However, the shoe is on the other foot now. We live in an economy of high demand for engineers and one could hardly blame this formerly neglected species if they now chose to rise in rebellion and build minor empires of personal aggrandizement. After all, the question has been asked, "Are Engineers People?" The answer, of course, is a resounding and unequivocal "Naturally, what else?" And engineers themselves prove this beyond any doubt.

They are not a lunatic fringe, nor are they, by and large, purely ivory tower dwellers without contact with earthly matters. Also, they are not out to make up for the lost time when their talents were far less in demand than now. They do not have a superficial desire to accumulate some fast bucks, pack their bags and move on to the next gold mine.

Engineers, like all other human beings, have fears, complexes, problems, indecisions as well as ideas, hopes and dreams. They do not want to be wooed and won or placed on the auction block and sold to the highest bidder.

Simply and substantially, they want to plant their feet firmly on the ground, take root, and grow. They want a job worth doing—a challenge for their talents. They want to know that the place in which they work is large enough and far-sighted enough to provide growing room, yet compact and intimate enough to make recognition possible in the shortest conceivable time.

Compact and intimate does not refer to the size of a company but to the size of an engineer's working environment. In a group of three, six, even twelve engineers, bolstered by collateral services such as scheduling and budgeting, the individual can make his maximum contribution. He can climb rapidly from number twelve or six in a group to number one in a group of his own. The burden of proof is fairly upon him, for his ability is under review constantly. That's all a good engineer asks. Ability will take care of the rest because scientific achievement for its own sake is a strong motivating factor and, when coupled with acknowledgement of achievement, it is an irresistible force.

Policy Number Three

Encourage talent by "from the ranks" promotions.

Americans are a peculiar clan. They take exceptional pride in those who have "made it the hard way," pointing out the opportunities that exist for each individual to become a self-made success. Now success can mean various things to various people. To one it may be accumulating a half interest in Fort Knox—at any cost. To another it may mean the quiet satisfaction of a job well done; a perplexing and intricate problem intelligently solved; the acceptance by the world of a contribution, large or small, to mankind's well-being.

There are other interpretations but the one word that correlates them is "recognition." This may be by the accretion of gold (which is recognition in many quarters), or glory (whether a Nobel prize or a pat on the back from a respected source), depending on one's own sense of values. Regardless of how the recognition arrives—in the form of fabulous sums of money, plaques and trophies of rare and precious metals, scrolls of sheepskin, a promotion to a better position—the tangible, physical award, while perhaps valued, is not of greatest importance.

The significant fact is that our exertions, our accomplishments, are recognized, thereby enhancing our mode of life and enriching it by encouragement and stimulation to greater efforts. How stifling, how frustrating to expend time, pains, zealous and prolonged effort, only to have our attainments ignored!

Recognizing this as a prime motivating factor, psychologically, in an individual, we at Packard Bell have a firm policy of "from the ranks" promotion and advancement. There is practically no limit to our endeavors to encourage and reward talent. It is not unknown to create advanced positions in order to obtain maximum mileage

Production line . . . Engineering supervision is a daily "must" here.

out of a concept, a dream, a plan, an idea. What better incentive can a man have than the security of a rewarding, responsible position with no dead ends, but only a long, open highway upon which to drive his fertile imagination? Here there are no speed limits or traps, no hindering obstacles, no obstruction of view. Just broad vistas of unlimited opportunity for professional expansion and significant personal growth.

The chief electronic engineer and the chief mechanical engineer of our Technical Products Division obtained degrees in the late 1940's. They began their Packard careers as contributing members of groups. From group members they graduated to group leaders, to project engineers; from project engineers to chief project engineers and from there to chief engineers. There are infinitely more examples of this type of success story. It repeats itself over and over at Packard Bell.

The director of engineering of our Home Products Division has been with us so long he tells everyone, "I was born here!" It's hard to pry a man loose from a job when he has that kind of attitude.

Policy Number Four

Demonstrate management strength by delegating authority with responsibility.

A recent issue of *Fortune* magazine refers to the men who manage the electronics industry as "a new breed of executives: the scientist-engineer turned businessman." The article goes on to say that "Electronics had no ready pool of talent to draw from when it began to expand rapidly in World War II. During that period it was manned by the bright engineering and scientific graduates of the late 1930's. These men are in their forties today, surrounded by the youngsters who have come out of the universities in the last ten years."

Those 40-to-50-year-old engineers turned businessmen are, in fact, the pivots of our industry. Engineering management is, and should be, recruited from the ranks of engineers. Packard Bell's vice president in charge of the Technical Products Division is a registered professional engineer with two engineering degrees; the director of engineering is an engineer with a doctorate in physics. Their twenty-odd years of broad experience, from laboratory work up the ladder to top executive positions, gives them an understanding not only of engineering problems but of engineers themselves. They know, because they learned it the hard way, that responsibility without authority leads to discouragement and frustration. It's a long road from one responsibility to a higher when authority rests solely in an ivory tower, removed by space and time from the place and moment of decision. Mental grey hairs come at an early age to those blessed with the authority, not only to think for themselves, but to decide and act accordingly.

We have mentioned previously in this section that a new specialty is rearing its head within the already highly-specialized engineering profession. The singular expert whose talents are beginning to be in demand is the engineer with management, administrative and/or business training. The need for this is obvious. The engineer, in order to be fully acquainted with his project, should know the "how come" of the "before" and the "what for" of the "after." He should understand something of business methods, contract negotiation and administration, cost accounting, and the gentle art of dealing happily with clients on the outside and supervisors and other employees on the inside.

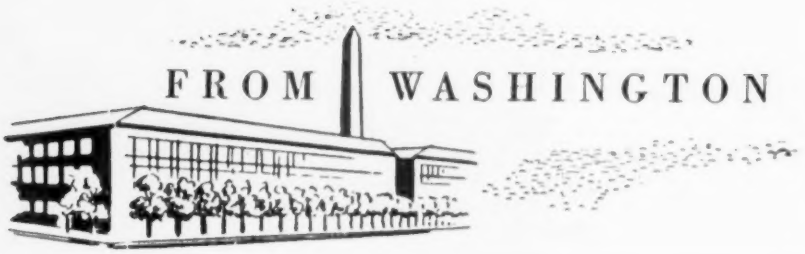
Unfortunately, not every engineer is a charmer nor a potential business tycoon but we at Packard Bell assume the potential in all our people. To this end, we are currently planning a program in management training which, we expect, will not necessarily explode each engineer into a superlative salesman, public relations practitioner, or father to all the workers on the assembly line, but will discover and exploit the managerial quali-

(*Continued on page* 34)

About the Author . . .

Dr. Bell

Dr. Robert S. Bell is both an experienced industrial executive and a corporation lawyer. A graduate of UCLA and Harvard Law School, he is a member of the California and Federal bars. During World War II, he was assigned to the Pacific Theatre as a special staff officer to General LeMay, Twentieth Air Force, and later Air Force Judge Advocate of the Occupational Forces in Japan. Dr. Bell's legal and business experience include trial attorney, Department of Justice; special assistant to U. S. Supreme Court Justice Clark, then head of the Anti-Trust Division for the Western U. S.; private law practice; general manager, Burnham Manufacturing Company. He is a director, Electronic Industries Association. He holds an honorary degree of doctor of science from Heald College of Engineering, San Francisco, for his leadership in development and manufacturing of electronic equipment.



By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

REPORTS PROBE PROFESSIONAL STATUS OF FEDERAL SCIENTISTS

THE pre-named "Sputnik Congress" returns to its legislative labors next month under an atmosphere of complete domination by technology. There are many and varied facets to this technological domination of the contemplated legislative output—expanded missile programs, reorganization of the scientific activities of government, military pay systems, more basic research, aid to education, and many others. But behind the success or failure which may result in each of these areas is the key ingredient of people—in this case the much-discussed engineers and scientists.

There is hardly anyone in Government today who would not agree that something must be done about the problems of engineers and scientists. These "problems" of many detailed points all fall within the broad categories of Pay and Prestige—and there are those who say that appropriate corrective action on Pay would automatically take care of Prestige.

In this context, two recent reports of the Committee on Engineers and Scientists for Federal Government Programs, composed of high-level officials of Government agencies, present some encouraging and some discouraging evidence of what may be forthcoming. The two reports are a "Survey of Attitudes of Scientists and Engineers in Government and Industry," and "A Report to the President with Recommendations for the Improved Personnel Management of Scientists and Engineers in the Federal Service." As the largest single employer of engineers, the action of the Federal Government will be significant not only for those directly affected, but also as an influence, both directly and indirectly, on other public employers and private firms.

The report to the President contains some two dozen recommendations for corrective action regarding personnel management of engineers and scientists, divided into four categories of relative urgency. Almost all the "urgent —immediate action" recommendations deal with pay revisions. The first asks that the Civil Service Commission be permitted to establish higher rates of pay for occupational groups in short supply, based on the finding that beginning rates of Federal pay for engineers and scientists are below the rates paid by private employers by approximately $1,000 as of June, 1956; the spread becomes more pronounced for the more experienced. Other "urgent" recommendations ask that a full study of Federal pay policies be undertaken, leading to a pay policy which will provide for ability to compete; flexibility to recognize individual differences in ability, performance, etc.; general alignment by occupations but able to adjust in specific occupations, if required.

The higher grade positions should be freed from number limitations and restrictions on allocation to grade, the report states. Government cannot compete for engineers and scientists by paying starting salaries at GS-5 ($4,480), it is stated, and the law should be changed to permit college graduates to enter at the GS-7 level ($4,525 to $5,335). This would still be below private employers' starting salaries, the report states, adding that the GS-5 grade for professionals is only a vestibule to be passed through as rapidly as possible before advancing to GS-7 within approximately six months. The Committee also urges that provision be made for the Government to assume the costs of moving to the first-duty station.

Other recommendations deal with improved utilization, better standards for position classification and qualification requirements, more effective selection devices, payment of pre-employment interview travel costs, publicizing of Federal engineering and science programs, support of professional society activities, payment of relocation and pre-employment physical examination expenses, incentive awards, outside training authority, and others in the fringe benefits area.

While all of these recommendations add up to a fairly attractive package, many of which would be extremely helpful and welcomed by the engineering profession, the main pay recommendation amounts to asking Congress to give the Civil Service Commission a blank check to set salaries of engineers and scientists by grade and geographical location, dependent on local private competition. The only limitation would be the maximum rate of $19,000. It is considered most unlikely that Congress would extend such broad authority to an agency in lieu of the traditional practice of Congress establishing salaries by law.

More discouraging, however, is the report's reflection of the Civil Service Commission opposition to the creation of a separate scientific and engineering schedule as proposed in the the pending Moss-Gubser legislation. On this point the Committee comments: "To date they (the separate schedule bills) have been too restrictive as to the types of occupational classes covered and have lacked the flexibility necessary to compete successfully with private industry. Since these proposals provide basically for a fixed schedule, they cannot respond readily to changing market conditions. Accordingly, even for a short range solution, this type of plan is inadequate."

DOES GOVERNMENT OR INDUSTRY GIVE THE BETTER DEAL

(As Seen by Govenent Scientists and Engineers)

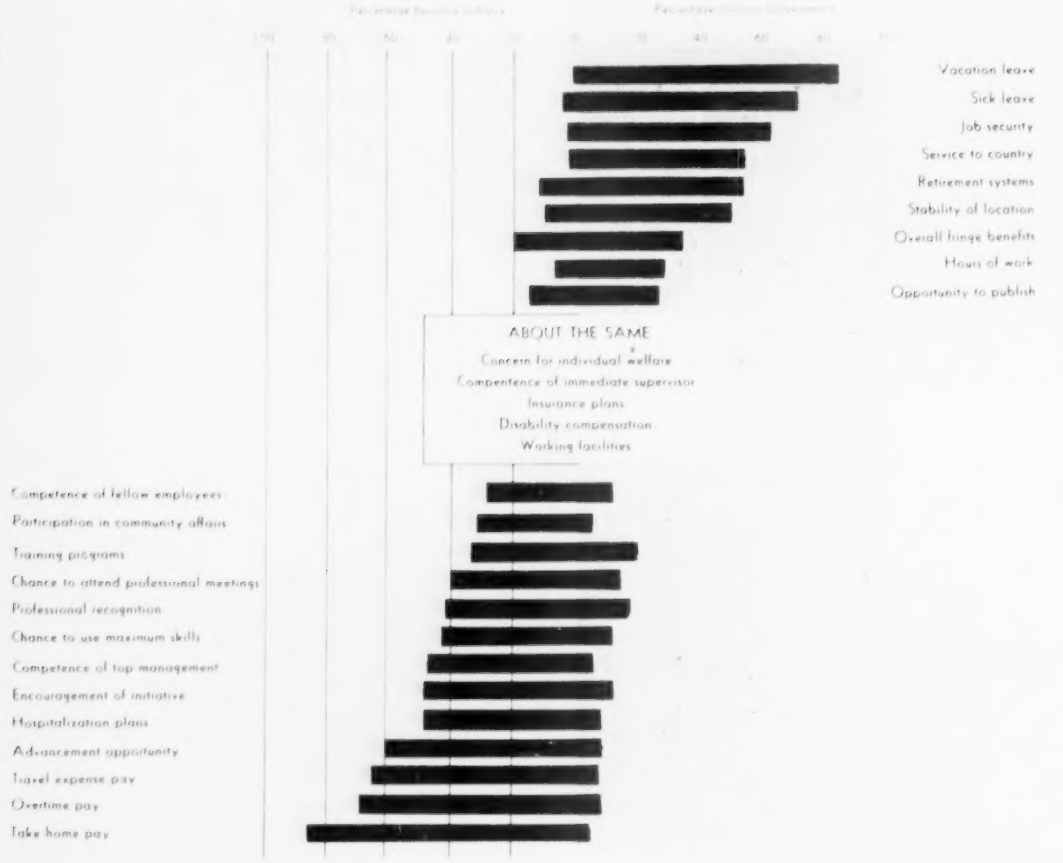


Chart I

This comment can be criticized on a number of grounds, the most important being that a separate professional schedule is the surest first step toward a restoration of professional prestige, which everyone agrees has diminished and must be corrected. The attitude survey of the same Committee discloses that 87 per cent of the scientists and engineers in the Government feel that a separate category for professional employees would aid in recruiting and retaining professional employees. As seen in Chart I, the Government engineers and scientists overwhelmingly think that industry gives "the better deal" on professional recognition. The Committee's undoubted sincere desire to improve the prestige of Federal engineers and scientists rests largely on monetary benefits and tangible fringe aids—important points, to be sure—but shown by repeated studies to be inadequate without the addition of separate identification based on professional status.

The 78-page attitude survey report provides valuable information on the comparative thinking of engineers and scientists in the Federal agencies and in industry. In summary, Government scientists and engineers by and large look favorably upon the Government as an employer and are a bit more certain than their industrial colleagues in feeling their jobs are extremely or quite important to their agencies. But the Government group clearly have some feelings of embarrassment about their choice of a career in public service and are less willing than industrial respondents to recommend employment in their agency to outside professional colleagues or friends.

Of fifteen elements rated, the factors of utmost importance to both Government and industry respondents are "interest potential of work" and "integrity of management." Pay and living conditions are of equal and considerable importance to both groups, but below four or five other elements more directly connected with the individual's work. There is less feeling by Government than industrial respondents that they are encouraged to participate in outside professional organizations. Defense agency respondents have less satisfaction with their professional environment than do either industrial or non-defense engineers and scientists.

Government comes out fairly well on working conditions, facilities, supervision and management relationships, career prospects and some fringe benefits, such as vacation and sick leave and retirement. A more unfavorable attitude is indicated by Government employees, however, in matters of pay, promotions, classification and training. It is particularly pertinent to note that most Federal engineers and scientists are in disagreement with several existing features of the Federal Classification System. They believe, for instance, that adequate classification of a professional position cannot be done by a person untrained in that profession. This is a point long made by NSPE, along with the advocacy of a separate professional schedule.

Engineering Employment Practices Digest

A short digest of a monthly bulletin published by the National Society of Professional Engineers in the interest of advancing cooperative relations between professional engineers and their employers. To regularly receive the complete publication which is distributed widely to industrial, commercial and educational organizations, write the NSPE, 2029 K St., N.W., Washington 6, D. C.

✓ **There will be a run-off election among Westinghouse engineers at the Electronics Division, Baltimore, to decide on union representation. On the first vote a salaried employees union received 150 votes to 136 for "no union," and nineteen for Westinghouse Engineers Association, ESA. The ESA unit drops off the ballot in the run-off and has advised the engineers it favors collective bargaining through the salaried employees union rather than "no union." The engineers voted to count their ballots apart from those of the clerical and technical employees, 182 to 124.**

* * * * *

✓ *A survey by White Collar Report shows two-thirds of larger companies and nearly three-fifths of smaller firms provide tuition-aid plans for employees. Most courses are taken on the employees' own time and must be job-related to qualify. The companies generally pay either 50 or 100 per cent of the cost.*

* * * * *

✓ American Management Association says engineers' salaries are "returning to normalcy." Its 1957 salary survey disclosed an average increase of 5.9 per cent between June 1956 and June, 1957, compared to an 8.6 per cent increase for the previous year. Quality control engineers had the greatest increase of 7.9 per cent. Some electrical and mechanical engineers had a rise of an average 7.5 per cent. The smallest increase went to systems and procedures analysts, 3.8 per cent. Median engineers' salaries ranged from $5,400 in the lowest category to approximately $13,100 for the top non-management level.

* * * * *

✓ **Starting salaries of inexperienced chemists and chemical engineers increased by more than 8% in the past year, according to a new survey by the American Chemical Society. This is the highest increase since 1952. Chemical engineers with doctors' degrees had a median starting salary of $675 per month while Ph.D. chemists recorded $650. Corresponding figures for masters' degrees were $525 and $485, and for bachelors', $460 and $435. Petroleum companies paid the highest starting rates, $475 and $460. Government was low at $375 for both groups.**

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✓ *The 1957 ASCE salary survey reports that between 1955 and 1957 civil engineers in the lowest grade had an average increase of twenty per cent. Median salary at entrance to the lowest grade climbed from $4,000 in 1955 to $4,780 in 1957. Percentage increases remained relatively high through the top grade, ranging up to 14 per cent for assistants to technical and administrative heads.*

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✓ Rep. Davis of Georgia, chairman of the House Subcommittee on Manpower Utilization, has criticized the slow progress of Federal agencies in improving the efficient employment of engineers and scientists. At the close of new utilization progress hearings, he said because of poor management the defense effort was being retarded by an artificially created scarcity of engineers. Davis said the main action since last year's hearing was the creation of committees, but little progress. He again criticized allowing cost-plus defense contractors to "pirate" government engineers and scientists through higher salaries reimbursed by the government. Davis said spending more billions of dollars is not the answer to missile supremacy and called for better utilization of engineers and scientists . . . Recent government reports on proposed engineering salary and other reforms are described in some detail in the "From Washington" column, this issue.

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✓ **A 56-page report by Deutsch & Shea, Inc., technical manpower consultants, concludes that there will be a substantial shortage of college-trained engineers until 1960, and possibly longer. The demand between 1950 and 1957 was in excess of 46,000 a year, the report states, but there were only 33,600 annual additions of college graduates during this period. The number of graduates will increase to 41,500 annually for the coming three years, it is stated, but the demand will likewise increase substantially.**

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✓ *The Packard-Bell Electronics Corporation of Los Angeles sets aside ten per cent of annual net earnings before taxes for profit sharing distribution to its engineers. (Editor's Note: See Dr. Bell's article on page 11).*

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✓ The Los Angeles Central Labor Council has vowed a fight to reverse the City Board of Public Works decision not to allow the union label on engineering drawings and plans. The labor group said it would back up the attempt of Local 171, American Federation of Technical Engineers, AFL-CIO, to put the union stamp on engineering plans through an informational and educational campaign among all union members and the general public. At the hearing, the professional societies fought the union move and the Board ruled that only the insignia of registered engineers and architects could be placed on plans, as required by state law.

1958-59 Nominees Are Announced

An Oklahoma man, widely known and respected in education and engineering circles, has been selected by the Nominating Committee of the National Society of Professional Engineers to head the 1958-59 slate of candidates for NSPE office. Clark A. Dunn, of Stillwater, Okla., has been nominated for the presidency, the Committee has announced. Currently serving a second term as vice president of the Southwestern Region, Dr. Dunn is executive director of the Office of Engineering Research and administrative head of the School of General Engineering at Oklahoma State University, Stillwater.

Vice presidential nominees selected by the Committee are: Harold A. Mosher, of Rochester, N. Y., Northeastern Region; John B. McGaughy, of Norfolk, Va., Southeastern Region; L. Eugene Easley, of Indianapolis, Ind., Central Region; W. L. Hindermann, of St. Paul, Minn., North Central Region; Noah Hull, of Houston, Tex., Southwestern Region, and Howard Blodgett, of Reno, Nev., Western Region. Messrs. McGaughy and Hindermann are nominated for a second term. Nominated for an 11th term as treasurer is Russell B. Allen, of College Park, Maryland.

In announcing the names of the candidates, the Committee pointed out that additional nominations may be made by members as provided by the NSPE Constitution. Other names will be placed on the official ballot upon petition of fifty members, all in good standing, provided such petition is received at least one week prior to the printing of the ballot. The closing date for such petitions, which should be sent to the national headquarters in Washington, D. C., is January 10, 1958.

Members of the Nominating Committee are: Allison C. Neff, chairman, Clifford D. Dier, Philip W. Genovese, Orland C. Mayer, J. A. McLennan, and J. N. Thompson.

The following are brief biographical sketches of the Committee's choices for NSPE leadership.

CLARK A. DUNN, of Stillwater, Oklahoma, nominee for 1958-59 president, is excutive director of the office of Engineering Research and administrative head of the School of General Engineering at Oklahoma State University, Stillwater.

He was born at Stickney, South Dakota in 1901. He received his BS degree from the University of Wisconsin, CE and MS degrees from Oklahoma A&M College and his Doctor of Philosophy degree from Cornell University. He is a registered professional engineer in Oklahoma.

His experience includes work with the South Dakota and Arkansas Highway Departments; consultant to a number of municipalities in Oklahoma; adviser to the Oklahoma Conservation Board, the Oklahoma Planning and Resources Board, and the Army General Forces Task Force Frigid Project at Fairbanks, Alaska.

Clark A. Dunn

Dr. Dunn was president of the Oklahoma Society of Professional Engineers in 1948; has been a member of the NSPE Board of Directors and is currently serving his second term as vice president of NSPE for the Southwestern region.

He is a member of the American Society for Engineering Education; a director of the Engineering College Research Council; a member of the Advisory Committee of the National Conference on Administration of Research; a member of the American Society of Civil Engineers, and holds membership in honorary Societies Phi Kappa Phi, Sigma Tau, and Chi Epsilon. He has been active in civic organizations serving as president of the Stillwater Lions Club; Chairman of the Stillwater Master Planning Board; and is a member of the Stillwater Chamber of Commerce.

HAROLD A. MOSHER, of Rochester, New York, vice presidential nominee for the Northeastern Region, is assistant director of engineering for the Eastman Kodak Company at Kodak Park, Rochester. After receiving his degree from Occidental College at Los Angeles, he joined the engineering technical staff at the Bell Telephone Laboratories in New York City. Following further experience with the Engineering Staff of Consolidated Film Industries in New Jersey, he joined the staff of the Eastman Kodak Company rising to his present position.

Harold A. Mosher

He has served as president of his local chapter, a member of the Board of Directors of the New York State Society of Professional Engineers and the National Society of Professional Engineers, and is currently the chairman of the Membership Committee of the National Society.

JOHN B. MCGAUGHY, of Norfolk, Virginia, vice presidential nominee for the Southeastern Region for a second term is a senior partner and chief engineer in the firm of Lublin-McGaughy & Associates, Architects and Consulting Engineers. A native of Norfolk, he attended the University of Virginia and Duke University receiving his BS and CE degrees from the latter institution. He is registered in Virginia, North Carolina, Florida, District of Columbia, and Hawaii.

John B. McGaughy

Prior to his present association he held various positions with the United States Government, his last position being that of chief of the Design Section, U. S. Engineers Office in Norfolk.

From 1941 through 1944, he was chairman of the faculty of the Norfolk Extension Division of the University of Virginia. He is a past president of the Virginia Society

of Professional Engineers; has served as the National Director from Virginia; and been chairman of a number of State and National committees. He is a past president of the Engineers Club of Hampton Roads, and a member of the Norfolk Board of Adjustments and Appeals. He is a member of the American Society of Civil Engineers, the Society of American Military Engineers, the American Concrete Institute, Phi Delta Theta and Theta Tau.

L. Eugene Easley

L. E. EASLEY, of Indianapolis, Indiana, vice presidential nominee for the Central Region, is manager and chief engineer of the Construction Division of W. H. Edwards Engineering Corporation, Indianapolis. Born in 1903, he was educated at the public and technical schools at St. Louis, Missouri.

Prior to assuming his present position in 1956, Mr. Easley was senior engineer and supervisor of structural and mechanical engineering, Allison Division of General Motors at Indianapolis. Before joining General Motors he was employed in a supervisory capacity in the Construction and Engineering Department of Montgomery Ward & Co. at Chicago, Illinois.

Active in chapter and state activities, he was president of the Indiana Society in 1951, following which he has continuously served as national director to NSPE. Currently chairman of NSPE's Constitution and Bylaws Committe, he is also a director of the Indiana Engineering Council, a member of the Construction League of Indianapolis, and the Indiana Building Congress. He is a Mason and has been prominent in numerous civic activities.

W. L. Hindermann

W. L. HINDERMANN of St. Paul, Minnesota, vice presidential nominee for the North Central Region for a second term, is division engineer in the Midwest area for the Asphalt Institute. He is a graduate of the University of Minnesota, having received a BS and an MS in civil engineering, and is registered in Minnesota.

Mr. Hindermann is a veteran of twenty-two years of service with the Minnesota State Highway Department, both in the laboratory and in the field, and his experience includes a wide variety of positions involving all phases of highway design.

The nominee holds the rank of Lieutenant Commander in the U. S. Naval Reserve. Active in both the Minneapolis and Duluth Chapters of the Minnesota SPE, he served as president of the Duluth group in 1953. He is a past president of the Minnesota Society of Professional Engineers and served two years as a National Director from Minnesota.

His memberships include the American Society of Civil Engineers, Asphalt Paving Technologists, American Road Builders Association, Highway Research Board, Society of American Military Engineers, and Sigma Xi.

Howard B. Blodgett

HOWARD B. BLODGETT, of Reno, Nevada, vice presidential nominee for the Western Region, is dean of the College of Engineering of the University of Nevada. A native of Missouri, Dean Blodgett attained his BS, MS, and CE degrees at the University of Arizona. Registered in South Dakota and Nevada, he is a former member of the South Dakota State Board of Engineering and Architectural Examiners.

Prior to assuming his career as a teacher and college administrator, Dean Blodgett had extensive experience in State Highway work, in Idaho, New Mexico and Minnesota; has served as consultant on various municipal problems. Prior to joining the faculty of the University of Nevada, he was professor of civil engineering at South Dakota State College.

Noah E. Hull

NOAH E. HULL, of Houston, Texas, vice presidential nominee for the Southwestern Region, is vice president and general manager of the Hughes Gun Company and assistant to the vice president-manufacturing of the Hughes Tool Company. A native of Ohio, he received his BS degree from Purdue University in 1917. Prior to his present post, he held executive engineering positions with the General Motors Corporation, the Firth Carpet Company, and the National Gypsum Company.

Mr. Hull is a registered professional engineer, in Michigan, New York and Texas. He has been active in the San Jacinto Chapter, the Texas Society of Professional Engineers, and is currently serving as National Director of the National Society of Professional Engineers from Texas. Mr. Hull is also chairman of the Professional Engineers Conference Board for Industry.

Mr. Hull is active in various civic organizations including the Houston Chamber of Commerce, American Legion, Rotary Club, and various Masonic bodies.

Russell B. Allen

RUSSELL B. ALLEN, of College Park, Maryland, nominated for an 11th term as treasurer, has served as a professor of civil engineering at the University of Maryland since 1933—acting as head of the department and assistant dean of engineering in recent years. A native of New Haven, Connecticut, he received his B.S. degree at Yale where he also did graduate work in structural engineering and architecture and taught civil engineering for five years. After spending several years as a construction engineer with the Boston and Maine Railroad, he engaged in private consulting practice in Connecticut before going to Maryland.

On 'Sounding Off' Or a Technique for Teaching Engineers Citizenship

By

MORRIS L. COOKE, P.E.

Consulting Engineer

We are living at a time in history when the swift development of events draws heavily upon our resources of citizenship. So that by virtue of his specialized training every professional is a dual personality. He is a "leader" among men in the professional sense, and at the same time he participates in some degree as a citizen in the community.

How to train for this duality of living has long been a matter of serious study among educators. On the one hand, the limited time available during the schooling period in which to absorb a vast amount of technical knowledge puts heavy pressure on those guiding students toward proficiency in a specialty. On the other, there is the testimony of such a widely recognized educational authority as U. S. Supreme Court Associate Justice Felix Frankfurter, who has said on more than one occasion, "The most important office in our democracy is that of being a citizen."

In my own profession of engineering, which has such widening opportunities for public service, there is a deplorable lack of interest shown by teachers or students in training for citizenship. There is an almost total lack of responsibility among the practitioners of the engineering profession for the public affairs of society. These are left, with an air of some professional disdain, to people trained as lawyers, business executives, and "politicians."

Yet it is my conviction that we engineers have a very considerable contribution to make toward the betterment of society, and that it is just as much the duty of our leaders in the profession to develop the techniques for training our engineers in citizenship as it is to turn them out technically competent.

Those who know how learning comes about, how habits of conduct are fixed, and how people develop the powers to express themselves in daily behavior, tell us that the earlier the educational process begins, the better the outcome. I may be pardoned here for making use of my own experience as an example of how one engineer was guided into such ways of using his time, both within his profession and as a citizen, as may illustrate the process of training itself.

As the youngest of six boys, I took my turn at household duties, shoveled snow, and fed the chickens. My brother Harvey, who later won highest honors at Lehigh University, milked the cow. As the youngest, I did a lot of fagging for my brothers. I remember one such assignment for Harvey, who was raising chickens and had a setting hen that worried him. She was inclined to leave her nest, and he admonished me to let him know if she did. It happened; so I ran all the way to the high school, burst in upon a classroom full of Harvey and his schoolmates, announcing loudly, "Harvey, the hen is off the nest." The results were such that I never forgot my lesson in social living.

In my boyhood I had the many advantages of spending time on my doctor-grandfather's farm. Such jobs as gathering the freshly-laid eggs, picking apples, and planting beans fell to my lot. Once every weekday I rode three miles on horseback to meet the stagecoach and get the mail. Evenings, I helped with the chores, bedding down the farm animals and, as a last task before supper and bed, drawing a heavy chain across the stable doors and padlocking it against any possible visit from prowling horse thieves.

As I grew up, my activities took on more of a public character. I carried baskets from the market for elderly women, frequently without compensation. In the absence of the sexton, I opened the church and lit the gas lights. Before the day of electric motors, I pumped the organ for Sunday morning service. I recall with special interest tolling the church bell during President Garfield's funeral. My brothers, under my doctor-father's guidance, each in his turn assumed the responsibility for making official returns to the U. S. Weather Bureau from observations made on thermometers, barometers, rain gauges, and other equipment furnished by the Government. Two interruptions of one year each in my own four-year college course afforded me an acquaintance with newspaper work, which has proved of inestimable value in my public and private life.

Now let me illustrate briefly my experience as an adult in keeping my hand in political and community affairs. Shortly after I gained my majority, I had a somewhat thrilling all-day experience as a watcher for a reform party at an election booth located in one of Philadelphia's toughest districts. Years later I organized a pre-election educational campaign carried on in some three hundred districts in Philadelphia where the political faction I represented had had no organization. On another occasion I recruited, on less than twenty-four hours notice, one thousand dependable citizens including three football teams, to be sworn in as special policemen and

deputy sheriffs for service at the polls on Election Day.

Through the years, as my professional obligations have permitted, I have served on the boards of directors of a hospital, an educational institution, and a city-wide Y.M.C.A. When my time did not permit attending meetings regularly, I have on occasion tried to make my contribution through having a place on advisory committees. Two books—*Our Cities Awake* (1916), a discussion of municipal government, and *Organized Labor and Production* (1938), written with Philip Murray, president of CIO—have seemed like worth-while social services. Lecturing at colleges and writing for the technical and lay press, and, more recently, drafting "Letters to the Editor" have enabled me to exercise some influence without too seriously interrupting my fixed public and professional duties.

On the more technical side: After being graduated (M.E.) at Lehigh, I worked during a full year as a machinist's apprentice at Cramp's Shipyard and Southwark foundry; was chief engineer on U. S. Gunboat Eagle during the Spanish American War; was chairman of the Storage Committee in World War I; developed Scientific Management under Frederick W. Taylor's tutelage in several industries such as printing, lithography and book-making; studied collegiate administrative methods for the Carnegie Foundation; directed the Giant Power inquiry for the Pennsylvania Legislature; was a member of the Power Authority of the State of New York; director of Public Works in Philadelphia; American "Expert" in settlement of the oil dispute with Mexico (1942); chairman, Technical Mission to Brazil (1942); headed the Mississippi Valley (1933), Great Plains (1936), and the President's Water Resources Policy (1950) Committees; initiated and helped to develop Rural Electrification Administration, through which electrical service has been taken to over three and a half million rural and farm families.

THE foregoing record is none to flattering. It is my hope that, even so, it may be suggestive to others. Some experience at the precinct level in community and political affairs is as desirable a training for positions in the higher echelons of policy-making and authority as work at the apprentice level is important in building engineering careers. It can be said further that this interweaving of public and private activities makes for an interesting and happy life and a sense of fulfillment which keeping within strictly technical and materialistic bounds does not make possible.

My childhood was not unlike that of a good many who grew up when I did, in a society in which parents early sought to have their children do things which had usefulness and whose by-product was a disciplining of character and a forming of outlook that led toward a concern about our surroundings and our fellowmen.

As parental influence wanes in this matter of teaching civic responsibilities, the schools and colleges should take over. Except as to "book learning," referred to in college curricula as the humanities, it has never been clear just how this should be done. At Haverford and several other small colleges the students have been led to study at firsthand the local public administration. Sometimes this is practiced as an educational device. At other places it is an attempt by the college to tidy up the local government. Teachers College at Columbia, with Carnegie financing, has made notable progress in a large number of high schools by leading the pupils not only to study civics, but to take an active hand in public and community activities.[1] Training of this sort should be continued at college. Studies in water conservation, labor problems, incentive systems, and public school policy are typical of subjects that might be introduced into the curricula. Of course, if only specialization and high initial salaries for graduates are the objectives, such suggestions go out of the window.

In the absence of that larger understanding and sympathy which result from almost any variety of community service, the student engineer, no matter how much of a master he may be as to his technical equipment, inevitably "lacks the dynamic conviction of his own importance and value as a citizen." We find him with a sense of detachment from the non-engineering and boundlessly important world all about him. This, in fact, is the unfortunate situation in which our whole profession of engineering finds itself.

Curiously enough, this detachment from practically all facets of the non-engineering world seems to account in a way for the fact that engineers at their meetings read "word for word" both their papers and their discussion, even though such contributions may already have been printed, distributed, and made generally available.

I was amused to see that a correspondent, writing to the *Journal*[1] of the ASEE, said, "I was aghast to note at Ames (where the 1955 annual meeting was held) the very considerable number of papers that were *read*—I mean *read word for word from copy*. This struck me as distinctly out of character for college teachers (of all people!)." Why should he have been surprised? Most of the speakers were engineers brought up in the fashion of reading "word for word" their contributions to engineering literature.

IN France—and perhaps elsewhere abroad—a rapporteur, having read all the papers devoted to a given subject, quite informally gives their gist to the audience. Then an author of any contribution who feels that the presentation by the rapporteur has been inadequate or misleading, is given an assigned number of minutes in which to present his angle on the point in dispute. This method of presentation undoubtedly heightens the interest of the audience and leads to a spontaneous type of general discussion.

[1] See *Reader's Digest*, August 1953; and *School Executive*, August 1955.

[1] Issue of September 1955.

Engineers practicing good citizenship. From left to right: John Volpe, P.E., first Federal highway administrator; Bertram Tallamy, P.E., present administrator; and Maj. Gen. Lewis W. Prentiss, executive vice president, American Road Builders' Association, and former Commissioner of the District of Columbia.

The author begins the article by pointing out that we are living in a time in history when the swift development of events draws heavily upon our resources of citizenship. Above: The gigantic fireball of a hydrogen bomb is an awesome sight reminding the most complacent of present responsibilities.

Quite a shock was administered to the engineering profession when, speaking in Pittsburgh a few years ago, Raymond R. Tucker, then, and now recently re-elected, Mayor of St. Louis and formerly Professor of Mechanical Engineering at Washington University, St. Louis, expressed the opinion that an outstanding weakness of the profession is that engineers individually do not "sound off" enough. He called this a "glaring out in the engineer's equipment as citizen" and one which made it difficult for an engineer to communicate—a most important attribute for anyone living in this day and age.

Mayor Tucker explained that engineers are not schooled to speak or write informally, or unless possessed of the more pertinent facts, or being otherwise adequately prepared. My own espousal of the Mayor's idea brought down on me some bitter correspondence. "Did you ever hear an engineer 'sound off'?" wrote a respected colleague. Shortly after Mayor Tucker's speech, I asked the wife of a distinguished engineer whether she "sounded off" on occasion. "Yes, I do," she replied, "but Sam does not. He says, 'How can I, if I do not have the facts?'" Sam's attitude is quite in accord with the best engineering traditions.

Perhaps the influence of large-scale business, so frequently in close affiliation with engineering, may have something to do with the engineer's reluctance to "sound off." Businessmen, especially those whose operations are regulated by government, resent the discussion of their affairs in the absence of what they regard as adequate safeguards. Until a few years ago, ASME members were not allowed to discuss any engineering matter before a non-engineering audience until it had been formally presented at a society meeting. Those who have experienced difficulty in having papers accepted for presentation will realize how effectually controversial ideas could be bottled up.

Alfred North Whitehead, the English philosopher-scientist, who might be considered a sound adviser as to the propriety of engineers' "sounding off," has said, "When you get a group of diverse professional people in a discussion, their experience is so varied that you are sure to get novel contributions to the idea. None of them may be final, some of them may not be valid, but all of them will make some contribution to the subject, and while perhaps they cannot be accepted, they will bear study."[1]

While we have some splendid examples of engineers serving in non-engineering and even striking public posts, normally such a person is looked upon by other engineers as having "left the profession" or as being "some kind of a socialist." Both of these descriptions were applied to a well known and competent teacher of engineering in a large western university, largely, I believe, because he was active in reform politics. It must be admitted that engineers occupied with non-engineering community activities are so rare as to constitute veritable biological sport. In a profession numbering 500,000, however, one might expect quite a few exceptions to a generally recognized law.

Now in contrast to the engineer's practice as to "sounding off," the balance of the community and its constituent groups—such as doctors, lawyers, the clergy, statesmen, politicians and labor leaders—operate under no prohibition about "sounding off." In fact, "sounding off" has always been a vital part of our American tradition, whether practiced on street corners, in the market place, in assembly halls, courts of justice, or in the seats of government.

So, as might be expected, the engineer is apt to feel a bit uneasy functioning in the expansive world outside engineering where "sounding off" is so generally taken for granted. In steering clear of "sounding off," with all its responsibilities and possibilities, the engineer necessarily falls back on his pursuit of the laws of nature which make possible his strictly technical, and at times profoundly important, utilitarian contributions. But here there is no adventure, no romance, no participation in the non-mechanistic forward march of mankind. The inhibitions set up by a purely technical training, the accompanying destruction of faith, and the distrust of emotion,[2] become integral parts of engineering training and afford on all but irreparable injury to the engineer's personality.

Those who have sensed the shortcomings of an engineering practice as a mode of life, or recognized the inadequacy of the engineer in his relations with the vast world lying beyond the technical engineering field, have felt that the inclusion of twenty per cent of humanities or cultural studies in engineering curricula might ultimately provide a lure toward community activities and public service. A five-year engineering course, as at Harvard, and making engineering a post-graduate course, have seemed promising. But thus far none of these suggested panaceas has materially affected the situation.

Three different tours of duty in Washington, D. C., since World War I, left me with the impression that the Harvard Law School graduates have in considerable numbers either volunteered or been drafted for the service of the public, frequently for assignments having little or no relation to the practice of the law. During the depression in the early thirties gossip had it that there were over two hundred Harvard Law School men—we had a nickname for the species—occupying positions

[1] The *Atlantic Monthly*, April 1954, page 68.

[2] In E.I.C.'s 1956 Annual Report in the Proposal for a Survey of the Engineering Profession (page 24) reference is made to "the traditionally unemotional engineer." Granting adequate intellectual powers, it is yet difficult to conceive of real professional stature in a teacher, physician, lawyer or clergyman in the absence of an adequate emotional equipment. Why should engineers blithely accept such a characterization? I do not. Some of my more important technical problems would have proved insoluble had I entirely avoided an emotional approach. M.I.C.

at the Capital, both high and low. So an inquiry has been made, and from Irwin N. Griswold, the distinguished dean of the Harvard Law School, recently came this reply:

"As far as I know, there are no special agencies set up at the Harvard Law School designed to impress on students the opportunities in public service. However, I think that that result is reached. It is reached in what I would hope was the sound way, that is, through the atmosphere of the school. Such an outlook is 'in the air' here. It is, to some extent, inherent in our profession. The students know that many graduates of the School are engaged in public service, at all levels. Many members of the faculty have devoted substantial parts of their careers to public service, and *it is natural that this is reflected in their teaching and in their advice to students outside the classroom.* (Italics mine)[1]

"The net result is, I think, that our students get a good impression of the opportunities they will have for public service, and some feeling for the responsibilities of lawyers generally to engage in such service, from time to time and in varying ways.

"Moreover, I think we tend to talk about the practice of law as a form of public service. Lawyers are officers of the courts, and good lawyers are constantly aiding the general welfare and the body politic through the advice and guidance they give to their clients.

"It is, after all, the public profession of the law, and I think that that point of view is widely held here. If that is inculcated in our students, at least to some extent, it should be a valuable part of their education. To the extent that it is done, though, it is done naturally and in the ordinary course, and, for the most part, without conscious effort to that end."

In choosing members of a staff of engineering teachers, either by the head of the college or by the head of a department, every effort should be made to secure, not only those who are technically competent in the assigned subjects, but those who give promise of being able to provide leadership to their students in this matter of public service. After a few years one might except the atmosphere to be so radically changed that "sounding off" would actually be encouraged, and increasing the reach of the Laws of Nature would seem quite relevant to a well-rounded engineering practice.

ANOTHER interesting development might be expected. Nearly all of our larger schools are increasingly selective in their admissions to the freshman class. The fact that an applicant for admission had a community activity background could be held in his favor. With Harvard admitting only one out of ten applicants, word of this attitude could spread far and wide and cause applicants, wherever they might be, to sweeten their chances for admission by taking part in community activities.

[1] Nearly 3000 degrees were conferred by Harvard University in 1956, distributed as follows:

College	996	Sch. of Public Health	65
Grad. Sch. of Bus. Adm.	587	Sch. of Design	55
Law School	503	Sch. of Public Adm.	42
Grad. Sch. of Arts & Sc.	416	Divinity School	31
Medical School	150	Dental School	15
Grad. Sch. of Education	114	Total	2,974

About 100 of these degrees, distributed among five categories, indicated some specialization in engineering.

One is led to speculate as to the added power of Harvard University as a social force if the students in these various departments could have had the good fortune to be taught by those with a liking for or experience in the public service and community activities, as is the case in the Law School.

The goal of any engineering or other professional school would seem to be "to prepare public servants," as explained in the law governing the University of Puerto Rico,[2] which reads as follows:

"By public servant shall be understood every person who, having availed himself of the opportunities that The People of Puerto Rico furnishes through its university, is graduated therefrom. In this sense, the public servant is not only the one who works in instrumentalities of the government, but every person equipped with a university education, in any position, profession, public or private activity, or kind of productive life that uses the intellectual equipment furnished by the university."

Organizations such as the American Bar Association and the American Medical Association, voicing on a national scale policies and aspirations of large groups of professionals, invite the engineers to do likewise. But thus far, every effort toward unity, such as American Engineering Council, EJC, and ECPD, has emphasized the desire of the constituent engineering disciplines—mechanical, civil, electric, and others—to avoid anything approximating consolidation and to safeguard what each takes to be its distinguishing characteristics, including its managerial set-up. May it not be that when engineers become more community-minded and community-activated, the way toward professional unity may be found? The larger impact of public service may outweigh relatively minor technical differences.

This is not an engineering paper. Some of it may be "sounding off." The author hopes that the discussion may make dents here and there in current engineering thinking.[1] ***End.***

[1] The author has discussed variations of this theme in previous publications as follows:

The Engineer and the People (Worcester Meeting ASME 1908)

The Public Interest as the Bedrock of Professional Practice (ASME 1918)

The Habit of Community Service (*Mechanical Engineering*, Dec. 1947)

Professional Ethics and Social Change (Felix Adler Lecture)

The Role of the Engineer in Community Affairs (Seattle Meeting ASEE, June 21, 1950)

It's Time to Bridge the Technical-Political Chasm (AMERICAN ENGINEER, April 1956)

The Engineer as Citizen (AMERICAN ENGINEER, October 1956)

Civic Responsibility? A Letter to the Editor (*Mechanical Engineering*, May 1957)

[2] Act May 7, 1942, No. 135, page 762.

About the Author . . .

Mr. Cooke

Morris Llewellyn Cooke, a consulting engineer in management, located at Philadelphia, Pennsylvania, writes against the background of a long career in public service. He was director of the Department of Public Works in Philadelphia 1911-1915; chairman, Storage Section, War Industries Board, 1917; executive assistant to the chairman, U. S. Shipping Board, 1918; chairman, Mississippi Valley Commission, Public Works Administration, 1933; director, Water Resources Section, National Resources Board, 1934; and administrator, Rural Electrification Administration, 1935-37.

Following the completion of these tasks, he filled many other responsible government posts, and in 1950-51 was chairman of the President's Water Resources Policy Commission. He has been an author and an editor, and is the recipient of many honors, including the "French Legion of Honor."

N.S.P.E. Believes

SPUTNIK AND THE PROFESSION

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

FOR many months, our newspapers, business, and technical magazines, have been calling to the attention of the public, the nation's need for individuals trained in science and engineering. Dire comparisons have been drawn with recent developments behind the Iron Curtain, not only in the training of engineers and scientists, but, as we have dramatically seen in the last few weeks, the resulting advances made by Russia because of this concentration in training. Millions of lines of type have been set recording interviews by eminent scientists, evaluation by political analysts, and interpretation by military leaders of the importance of these scientific developments. We have heard the President address the Nation on two occasions pertaining to the status of our own scientific achievements—particularly as they relate to the defense of our nation. And we have heard his important announcement appointing Dr. James Killian, president of MIT, as his special assistant to co-ordinate scientific activities of the Federal Government.

While much attention has been focused on the scientific and engineering needs of the Nation, NSPE believes it important that we realize that we are in need of leadership in many fields of endeavor at this time. This need is brought about primarily because we are endeavoring to service the expanding population created by the higher birth rate of the forties, with the lower birth rate of the depression years of the thirties. This depression of the birth rate curve represents, at the present time, the age bracket between twenty and thirty years of age. The curve representing the numbers in this age bracket is still on the down grade, and the disturbing statistic results that, by 1965 we will have 750,000 less males in the United States in the age brackets twenty-four to thirty-five than we have today. As Dr. Edward Teller told the Nation recently, it is from scientifically trained personnel in this age bracket, that we may expect the bulk of our engineering and scientific advances of the future. It was with this background and many other aspects of this extremely complex problem, that the Board of Directors considered the statement approved at the Bismarck meeting and reported in the November issue of the AMERICAN ENGINEER.

The concern for science and engineering, of course, has been increased as a result of Russia's launching of Sputniks I and II. Already, proposals are being made in both the legislative and executive branches of the Federal Government for programs to meet the challenge. NSPE will report on these proposals as they are presented, and, through its committees, endeavor to analyze the effect they may have on the profession. Through its usual reporting in the AMERICAN ENGINEER, Legislative Bulletin, and information to chapter and state Officers, it will bend every effort to keep the membership up-to-date on the rapidly changing developments.

NSPE believes that the engineering profession is challenged as never before with providing an important segment of the brain-power needed by our nation in the years ahead. It also believes, that suggested solutions to the problem should be weighed very carefully, and, that the long-range implications of whatever solutions are proposed, be carefully considered, so as not to further compound the problem even though offering an immediate panacea. NSPE further believes that emphasis now more than ever before, should be based on quality rather than quantity. Potential engineers should be better grounded in fundamentals when they enter the engineering educational program, and should be better informed as to the qualifications essential for an individual to become a successful engineer.

The decreasing numbers in the important age brackets, indicated earlier, lend increasing weight to the requirement that we use our engineering brain-power at its highest potential. This challenges the users of engineering services to provide the professional climate and incentives to challenge the engineers on which they rely. It challenges the engineers to be constantly alert as to ways and means of eliminating from their day's schedule routine or sub-professional activities. And, it challenges the professional societies to provide the forum and studies to assist both engineers and the users of their services, to a better appreciation of ways and means by which the above may be accomplished. Dr. Killian's words of several months ago have even greater significance today—"perhaps there has been no time in history for engineering and science when its opportunities have been greater, its responsibilities more exacting, its need for professional statesmanship more urgent."

Use This Folder

To List Your Firm Name in the . . .

1958 PROFESSIONAL ENGINEERS' BUYERS GUIDE

An Added Feature in the

NATIONAL ENGINEERS' WEEK ISSUE *American Engineer* **FEBRUARY 1958**

Every February AMERICAN ENGINEER is designated as the NATIONAL ENGINEERS' WEEK ISSUE. Once again, during 1958, the week of Washington's Birthday, February 16-22, will be celebrated as National Engineers' Week. The theme will be *"Engineering Builds Broader Horizons."* This annual observance honors the professional engineer for the great contribution he has made to the American way of life. The Week will be observed across the nation by the President, state officials, governors, mayors and civic leaders. Many of the nation's leading firms will participate with special radio and TV programs, spot announcements, poster displays and like activities. The NATIONAL ENGINEERS' WEEK ISSUE of the AMERICAN ENGINEER will feature these activities for its more than 42,000 registered professional engineer readers. This timely issue will reach your TOP engineering market *(78.4% buy or specify)* during the first week of February.

List your Firm in one of the following:

★ Plan 1.—Three FREE listings of your firm name and address in the Professional Engineers' Buyers Guide. Additional listings
★ $5.00 each.

★ Plan 2.—TO ADVERTISERS in the February 1958 issue . . .

★ a. A key line added to each bold face listing giving the page number of your advertisement.

★ b. Your advertisement keyed to a Reader Service Card and all inquiries forwarded to you.

★ c. No charge for additional listings.

★ Plan 3.—Bold face listings of your firm name and address with a Column Box, or boxes, showing your brand names or
★ services.

★

here is all you need to do:

The Professional Engineers' Buyers Guide is a regular feature of the February National Engineers' Week issue. Product headings are shown on the inside of this folder. Check the subjects under which you want to be listed, fill in the information on the last page and return this folder.

Deadline is January 2, 1958.

Return completed folder to AMERICAN ENGINEER, 2029 K St., N.W., Washington 6, D. C.

Check the Product Headings for your Listings in the 1958 Professional Engineers' Buyers Guide

PRODUCT HEADINGS—BUILDING MATERIALS

- Bathroom Equipment
- Bricks
- Caulking and Sealing
- Cement
- Cinder Blocks
- Concrete Prestressed
- Copings and Gravel Stops
- Corrugated Aluminum
- Door Hardware
- Doors and Sashes
- Fireproof Tiling
- Flooring
- Floor Hardener, Concrete
- Floor Tile
- Glass Blocks
- Heating and Vent. Equip.
- Heating Panels
- Insulation
- Lath Boards
- Lighting Fixtures
- Lime, Building
- Lumber
- Marble
- Metal Ceilings
- Paints, Varnishes
- Plaster, Gypsum
- Plumbing Fixtures
- Radiators
- Roofing, Guttering
- Scaffolding
- Screens
- Sheathing
- Shingles
- Siding and Building Papers
- Slate
- Stair Treads
- Steel Floor Armor
- Steel, Structural
- Stone
- Storm Windows and Doors
- Tapestry Brick
- Terra Cotta
- Tiling
- Timber
- Wall Boards
- Wall Lining
- Water Heaters
- Waterproofing Materials
- Window Glass

OTHER

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PRODUCT HEADINGS—GENERAL

- Abrasives
- Actuated Carbon
- Adding Machines
- Adhesives
- Aerial Tramways
- After Coolers
- Agricultural Equipment
- Air Brakes
- Air Cleaners, Electronic
- Air Compressors
- Air Conditioners
- Aircraft Accessories
- Aircraft, Engines & Equip.
- Aircraft Ground Support Equipment
- Air Diffusers
- Air Recovery
- Air Sampling
- Alarm Systems
- All Wheel Drives
- Aluminum
- Anhydrouse Ammonia Plants
- Antenna Systems
- Architects Supplies
- Artists Supplies
- Assembly Machines
- Automatic Clutches
- Automatic Control Panels
- Automatic Transmission
- Automobile Accessories
- Automatic Door Controls
- Badges
- Balancing Machines
- Ball Bearings
- Batteries
- Belting, Machinery
- Blast Cleaning Equipment
- Blasting Equip., Materials
- Blowers
- Blow Torches
- Blue Print Papers
- Boilers, Accessories
- Boiler Feed Systems
- Bonds (Surety)
- Bookkeeping Machines
- Books, Technical, Scientific
- Booth, Acoustic Telephone
- Brake Linings
- Brass Equipment
- Bridge Decking
- Broaches
- Cable, Electric
- Cable, Multi Conductor
- Calculating Machines
- Calipers
- Cameras
- Carillons, Electric
- Cast Alloys
- Castings
- Ceramics, Elec. Porcelain
- Chair Lifts
- Chemicals, Cleaning
- Chemicals, Industrial
- Chemicals, Sewage Treatment
- Cleaning Equipment
- Clutches
- Coal
- Coatings
- Coils, Industrial
- Commercial Trailers
- Communications Equipment
- Compressors, Rotary
- Computers
- Concrete Additives
- Concrete Equipment
- Concrete Hardeners
- Condensers, Evaporative
- Conduit, Underground
- Control Equipment
- Conveyors
- Cooling Towers
- Copper & Copper Alloys
- Cores, Powdered Iron
- Corro[illegible]bitors
- Couplin[illegible]
- Courses, Training
- Cranes
- Crystals
- D. C. Capacitors
- Deaerators
- Decalcomania
- Deep Drawings
- De-Humidifiers
- Dehydrators, Air
- Depth Recorders
- Dies
- Diesel Engines
- Diodes
- Disinfectants
- Door Operators, Electric
- Drafting Materials
- Drawing Instruments
- Drawing Stands
- Drills, Electric
- Drives, Adjustable-Speed
- Duplicators
- Dust Cleaning Equipment
- Dust Collectors
- Dust Masks
- Dyes
- Earth Moving Equipment
- Electric Brakes, Clutches
- Electric Motors
- Electric Equipment
- Electrical Supplies
- Electromagnetic Devices
- Electronic Communication Equipment
- Electronic Computers
- Electronic Equipment
- Elevators
- Engineers Supplies
- Engines, Gas Turbine
- Engines, Steam
- Evaporators
- Explosives
- External Comparators
- Fasteners
- Fasteners, Belt
- Fathometers
- Filing Devices
- Filing Equipment
- Film
- Finned Tubing Industrial
- Filters, Air
- Filters, Liquid
- Fire Extinguishers, Equip.
- First Aid Cabinets
- Flashlights
- Floor Coverings
- Fluorescent Lamp Ballasts
- Fluorescent Lamps
- Flow Control Systems, Meters
- Food Processing Equipment
- Fork Lift Trucks
- Fountain Pens
- Fuel Oil Additives
- Furnaces
- Furnaces, Enclosures
- Gas Burners
- Gasoline
- Gauges
- Generators
- Germicides
- Glue
- Goggles
- Graphites
- Grating
- Greases
- Grinding Machines
- Hardware
- Heat Exchangers
- Heat Transfer
- High Fidelity Equipment
- Hopper Feeders
- Hose
- Hose, Dust Collector
- Hose, Ventilating
- Hydraulic Equipment
- Hygienic Instruments
- Incinerators
- Index Mechanisms
- Ink
- Insecticides
- Instruments, Process Control
- Instruments, Testing
- Intercoms
- Iron Castings
- Irrigation Equipment
- Laboratory Apparatus
- Lacquers
- Lamps, Germicidal
- Lamps, Ultra-Violet
- Lathes
- Lenses, Optical
- Levels
- Lever Switches
- Lighting Equipment
- Lining Materials, Tank
- Linings, Corrosion Resis.
- Liquid Gas Containers
- Liquid Gas Pumps
- Liquid Level Controls
- Liquefied Petroleum Gas Plants
- Locks
- Lubricants
- Lubrication Systems
- Machine Guards
- Machinery, General
- Machinery Mountings
- Machinery, Special
- Magnesium
- Magnets, Permanent
- Marine Engines
- Marine Oils
- Masonry Drills
- Measuring Instruments
- Materials Handling Equip.
- Materials, Testing
- Measuring and Controlling Instruments
- Measuring Instruments
- Measuring Tapes and Rules
- Meters
- Micrometers
- Moisture Control Equipment
- Motor Oils
- Motor Trucks
- Mufflers, Engines and Compressors
- Name Plates
- Name Plates, Decalcomania
- Needle Bearings
- Office Equipment
- Office Furniture
- Office Supplies
- Oil Burners
- Oil (Lubricating)
- Oil (Paint)
- Ovens, Industrial
- Packaging Equipment

Packing—Mechanical
Paint Brushes
Paint Sprayers
Parts, Precision
Paving Materials
Pencils, Artist
Pencils, Drafting
Pencils, Pastel
Pens, Drafting
Photocopiers
Piling, Sheet
Pillow Blocks
Pipe, Aluminum
Pipe, Clay
Pipe, Concrete
Pipe, Concrete Pressure
Pipe Fittings & Flanges, Welding
Pipe, Iron
Pipe, Steel
Plastic Coated Tubings
Plastics
Polyester Resins
Porcelain Enamel Panels
Power Capacitors
Power Plant Insurance
Power Transmission Equip.
Precision Castings
Precision Instruments
Preservatives
Presses, Punch
Pressure Sensitive Tapes
Pressure Vessels
Protective Spectacles
Public Address Equip.
Pumps
Radar Equipment
Radiators
Radio Apparatus
Radio Equipment
Radio Parts
Railway Equipment
Reamers
Rectifiers, Power
Reflecting Material
Refractories
Refrigerants
Refrigeration Equipment
Regulators, Pressure and Temperature
Regulators, Voltage
Reinforcement, Wire Fabric
Relays
Reproduction, Mach. & Mater.
Resistors
Road Building Equipment
Roller Bearings
Rolling Mills
Rotameters
Safes
Safety Devices
Safety Equipment
Safety Switches
Saws
Scale Inhibitors
Scales
Scientific Instruments
Sewage Treatment Materials
Sewerage
Shafting, Flexible
Sharpening Stones
Sheet Metal
Shock Absorbers
Shores
Silos
Slide Rules
Slings, Wire Rope
Slitters
Smoke Control Systems
Soil Sampling Equip.
Soil Testing Apparatus
Sound Systems
Stainless Steel
Steel (Other than structural)
Stokers
Superfinishing Machines
Supplies (Machinery)
Suppressors
Surveying Instruments
Sweepers
Swimming Pools, Supplies and Equipment
Switch Boxes
Switches, Electrical
Tables, Elevating
Tanks, Cleaning
Tanks, Storage
Taps
Telephone Equipment
Television Receivers
Temperature Indicators
Timers
Tires
Toolholders
Tools
Tools, Cemented Carbide
Towers, Hoist
Tracing Cloth
Tractor Supplies
Tractors
Traffic Direction Equip.
Trailer Accessories
Trailers
Tramways, Aerial
Transfer Machines
Transformers
Transits
Transportation Equipment
Trenchers
Truck Bodies
Truck Equipment
Trucks, Lift
Trucks, Motor
Tubing
Tubing, Corrosion Resistant
Valves & Fittings
Valves, Solenoid
Vibration Controls
Vises
Voltage Regulators
Waste Heat Recovery Equipment
Waste Treatment Equipment
Water Conditioning Equip.
Water Control Apparatus
Water Treating Chemicals
Welding Electrodes (Alloy)
Welding Equipment, Supplies
Well Machinery
Winches, Hand
Wire Cloth
Wire Fabric
Wire Rope
Wrenches
Wrought Iron Plate

OTHER

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Typical Listings in Earlier Guides . . .

DIES

General Electric Co.
Carboloy Dept.
11177 E. 8-Mile Rd.
Detroit 32, Mich.
See advertisement Back Cover

DIESEL ENGINES

General Motors Corp.
General Motors Bldg.
Detroit 2, Mich.
See advertisement Cover III

Caterpillar Tractor Co.
Peoria, Ill.

Worthington Corp.
Harrison, N. J.

DOOR OPERATORS, ELECTRIC

Overhead Door Corp.
Hartford City, Ind.

DRAFTING MATERIALS

Eberhard Faber Pencil Co.
New York—Toronto
See advertisement page 7

Warren-Knight Co.
136 N. 12th St.
Philadelphia 7, Pa.
See advertisement page 39

Arsco American, Inc.
3308 Edson Ave.
New York 66, N. Y.

Frederick Post Co.
3650 N. Avondale Ave.
Chicago 18, Ill.

FORK LIFT TRUCKS

Revolvator Co.
8782 Tonnele Ave.
North Bergen, N. J.
See advertisement page 6

Automatic Transportation Co.
101 W. 87th St.
Chicago 20, Ill.

HEAT EXCHANGERS

Niagara Blower Co.
405 Lexington Ave.
New York 17, N. Y.
See advertisement page 8

HEAT TRANSFER PANELS

Thermo-Panel Div.
Dean Products, Inc.
616 Franklin Ave.
Brooklyn 38, N. Y.

HIGH FIDELITY EQUIPMENT

Radio Corp. of America
Camden, N. J.

Stromberg Carlson Co.
100 Carlson Road
Rochester 3, N. Y.
See advertisement page 9

HOPPER FEEDERS

Aidlings, Inc.
95 Liberty St.
New York 6, N. Y.

HOSE

Allied Metal Hose Co.
3746 Ninth St.
Long Island City, N. Y.

COLUMN BOXES

To List your Products or Services

PAVING MATERIALS

Koppers Co., Inc.
Tar Products Division
Pittsburgh 19, Pa.

KOMAC patching and paving premix

◀ ½" COLUMN BOX
1½" wide x ½" deep

PENCILS

Charles Bruning Co., Inc.
4700 Montrose Ave.
Chicago 41, Ill.

Charcoal Pencils
China Marking Pencils
Colored Pencils
Drawing Pencils & Leads
Multikolor Pencils

◀ 1" COLUMN BOX
1½" wide x 1" deep

For Your Listings in the

1958 Professional Engineers' Buyers Guide

Turn the page and Choose Your Plan

SPACE RESERVATION **. . . for the February 1958, AMERICAN ENGINEER**

Buyers Guide closes January 2

Advertising forms close January 10

Choose your Plan . . .

1 List us in the 1958 Professional Engineers' Buyers Guide under the Product Headings checked inside this folder.

Three listings free and a charge of $5.00 each for ..... additional listings. (Insert number over three)

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2 The Product Headings under which we want bold face listings in the 1958 Professional Engineers' Buyers Guide are shown inside this folder. Our listings will include a key line showing the page number of our ad. And our ad will be keyed on a Reader Service Card.

Reserve for us ..... page(s) in the February 1958, National Engineers' Week issue of the AMERICAN ENGINEER.

....Copy enclosed
....Copy later (Ad deadline January 10)

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3 Insert bold face listings for us in the 1958 Professional Engineers' Buyers Guide under the Product Headings checked inside this folder. Also, insert our Column Box(es) under the following Product Headings .....

.....

Insert Number of Boxes	Copy for our Column Box:
½" Column Box(es)	.....
1½" x ½" Each $15.00	.....
1" Column Box(es)	.....
1½" x 1" Each $25.00	.....

★

FILL THIS IN TO COMPLETE YOUR LISTINGS

AMERICAN ENGINEER:
List us in the 1958 Professional Engineers' Buyers Guide as shown in Plan .... above.

Here is copy for our listing:

Firm Name ..... Signature .....

Address ..... Title .....

City .....Zone ....State ..... Date .....

Return completed folder to AMERICAN ENGINEER, 2029 K St., N.W., Washington 6, D. C.

Editor's Note—The five condensed papers presented here were given at a conference in conjunction with the recent annual meeting of the National Society of Professional Engineers. The conference on young engineers in private practice was held simultaneously with conferences devoted to problems of young engineers in government, industry, and education. Each session featured leading figures from the engineering field involved.

These papers from the conference on private practice are the final ones in a series presented by the American Engineer.

A Symposium . . .

Professional Development of the Young Engineer in Private Practice

ALEX VAN PRAAG, JR.
Warren & Van Praag, Inc.
Decatur, Illinois
(Employer Viewpoint)

ALFRED J. RYAN
Alfred J. Ryan & Associates
Denver, Colorado
(Employer Viewpoint)

C. D. WILLIAMS
Patchen and Zimmerman
Augusta, Georgia
(Employer Viewpoint)

JOHN A. McFEE
C. Warren Bogan & Associates
Washington, D. C.
(Employee Viewpoint)

TOM LOWE, JR.
Michael Baker, Jr., Inc.
Jackson, Mississippi
(Employee Viewpoint)

About the Author . . .

Mr. Williams

Clifford D. Williams received his BSCE from Penn College and his CE from Iowa State College. Following the completion of his education at these institutions, he entered upon his thirty-seven years of varied civil engineering experience. These include the following: five years as head of Civil Engineering, Penn College; seven years as head of Civil Engineering, University of Florida; nine years in bridge engineering for New York Central RR; five years with the South Dakota Highway Commission; seven years in private engineering practice, assignments with the Southern California Edison Company and other firms, and currently the chief engineer of Patchen and Zimmerman.

Mr. Williams is a member of the Georgia SPE, ASCE, ACI, AREA, and the International Association for Bridge and Structural Engineers. He is also the author of numerous technical and professional engineering works.

PROBABLY the most common criticism of employers of engineers is that they are interested solely in getting along with the job at hand and do not recognize the need for professional development of employees. It is equally true that many employees feel that satisfactory accomplishment of the assigned work is the limit of their obligation to the employer. The consulting engineer cannot afford to live with these concepts of professional responsibility; his success is dependent on the professional development of every man in his employ. Neither can the employee afford not to prepare himself for positions of greater responsibility.

Most employers and employees alike will agree that the technical and professional organizations should be supported by engineers, that engineers should be active in civic affairs, that all qualified engineers should be registered, and that each engineer should be training himself to write better engineering reports and technical articles. Unfortunately, lukewarm attitudes toward these achievements appear to be the common rule rather than the unusual.

The entire picture would be greatly improved if each employee were to recognize that he has a responsibility to his employer to act and think like a professional engineer, to be widening his field of acquaintance, and to be improving his scope of engineering knowledge through activity in the engineering societies. Likewise, the conditions always improve when the employer encourages professional activity among his employees. . .

Almost every community in the United States is reasonably near the meeting place for one or more technical or professional societies. In large cities practically all of the societies have regular meetings. As a rule these chapters and branches are looking for persons who may be willing to work on committees, as officers or directors,

or to give talks and papers. When the opportunities are considered at the state and national levels there is almost no limit.

The problem of improving writing techniques and getting activity in the preparation of technical articles is not as easy to solve. It appears to be almost hopeless to get the average engineer interested in writing. Any method that might be used to encourage engineers to become interested in professional writing would be of interest to me, personally.

It is believed that little need be said about the desirability and economy of good physical facilities; proper lighting, ventilation, air conditioning, clean, adequate working areas always pay for themselves.

The question of working hours is frequently a difficult one; regular time is seldom the basis for any difficulty. The problem is overtime, and the cause is fundamental. The nature of the consulting engineers business is such that it is impossible to secure commissions of the right size, timed to suit the available working force; there will continue to be periods when the workload is unbalanced. To require employees to work long hours of overtime is not in the interest of the employee nor the employer, but sometimes cannot be prevented. . . .

Several studies have been made by the engineering societies that give valuable information about the level of engineering salaries in various parts of the country and in different types of employment.

A recent study of the engineering salaries for a particular engineering firm showed some interesting relations to the construction cost indexes. This study compared total engineering payroll for February, 1957, with that of February, 1952. The 1952 figure indicated eighty-two employees and the 1957 figure 102 employees. The 1957 payroll was 25.7 per cent higher per man than the 1952 payroll. During the same period of time the *Engineering News-Record* Building Cost Index showed an increase of twenty-five per cent and the Skilled Labor Index 25.5 per cent.

A majority of engineering fees are based on a percentage of construction cost. When the construction cost raises twenty-five per cent and the payroll increases twenty-five per cent it is probable that the overhead costs will also rise about the same amount and the entire relationship has been maintained. It is believed that, on the average, one-half of the engineering fee is used for salaries; the remainder is overhead cost and profit. Overhead items must include such costs as rent, utilities, supplies, clerical and stenographic help, duplication and printing, company donations, lost time due to scheduling, time used for estimates prior to receiving commissions, company contributions to social security, insurance, retirement, and other fringe benefits.

Consideration of profit sharing plans and bonus plans is necessarily tied to the level of salaries paid and the amount of company profit realized. The advantage of profit sharing plans, as with other fringe benefits is supposed to be an inducement to employees to stay with the firm. This, in turn, is presumed to encourage improved production and greater profit. Certainly any reduction in turnover of manpower results in a reduction of recruiting costs and training costs. Many engineering firms now have some form of profit sharing in effect. In most cases these plans pay the employee an amount that reflects his length of service.

Large engineering firms are engaged to a considerable extent in a production job. In such an enterprise all of the employees cannot be classified at the same level; there must be graduated levels of responsibility and qualifications from top positions to the lower levels. If all employees stay with a given firm indefinitely, and if each person progresses in his field and advances in grade, the top levels will eventually be over-crowded. This ultimate condition has not yet become a matter of concern. There are many reasons for changes of employment and a considerable portion of this shift continues to be by men in the upper qualification levels. The nearest ideal solution for both employer and employee is probably to fill vacancies in the upper levels by promotion within the organization rather than with new employees. To make this work requires continuity of service that will make qualified persons available for advancement.

It is not believed that unionism of engineers is extensive enough in private practice to be of any particular concern. This is probably true because of the nature of conditions that foster unionism and the nature of the private engineers business. . . . — ***End.***

About the Author . . .

Mr. Van Praag

Alex Van Praag, Jr., president of Warren and Van Praag, Inc., of which he first associated himself in 1922, was born in Little Falls, Minn., January 29, 1896. Attending James Millikin University and the University of Illinois, he received his BS in CE from the latter institution in 1917. He served in World Wars I and II and the Korean War. In the first W.W., he served as a first lieutenant in the U. S. Army with service at home and abroad; W.W.II found him engaged by the Government and the Corps of Engineers on a number of special assignments, and during the Korean War and since, he served the U. S. Corps of Engineers as architect-engineer on a variety of projects, including the design and construction of facilities at Fort Knox, Ky.

Mr. Praag is a member of the following: NSPE (president, 1948), Illinois SPE (president, 1942), ASCE, AICE, AWWA, and the Federation of Sewage and Industrial Wastes Associations.

PROFESSIONAL development opportunities are abundant in offices both large and small. The only limitation is the willingness of the young engineer to accept the opportunities and to pursue them.

The deterent to such opportunities is a seemingly growing attitude on the part of young engineers, particularly applicants for engineering positions, to give the least service for the greatest compensation, rather than to give the most service for fair compensation.

In witness of what I state, I call attention to the insistence of applicants that they be assured of every privilege of vacations, sickness and hospital benefits, short working hours, opportunities for salary advancements, and permanent employment, all before they express willingness to discuss, consider or accept excellent employment opportunities. This condition is probably encouraged and accelerated by the employers themselves as a result of their highly organized and pursued student and engineer recruitment programs.

If our office may be used as an illustration, let me point out that we urge our young engineers to participate in technical and professional organizations. Most of them are members of the Illinois SPE and many have memberships in the principal technical societies. This we encourage.

We encourage registration to the extent that we give young engineers time from their assigned duties to

(*Continued on page 41*)

STRICTLY BUSINESS

Personalities . . . The **Hyster Company** announces the appointment of **Fay Brainard** to the position of chief methods engineer of the Portland, Ore., manufacturing plant . . . **Dr. J. F. Downie Smith** has been elected a vice president of **Carrier Corporation** and will head its central Research and Development Division. **Walter A. Grant**, vice president since 1953, has been designated as coordinator of all development engineering activities . . . **Elroy C. Carlson** has been named staff engineer of **Georgia-Pacific Corporation**, Portland, Ore. . . . The appointment of **Dr. Clement J. Savant, Jr.**, as director of engineering for **American Electronics, Inc.**, Los Angeles, Calif., has been announced by **Robert A. Lehman**, executive vice president and general manager . . . **De Leuw, Cather & Brill** and **De Leuw, Cather & Company**, New York, N. Y., have announced that **William A. McWilliams** has joined their organization . . . **Frank L. Goetz** and **Abraham N. Karp** have been named sales managers by **McIntosh Equipment Corporation**, New York, N. Y. . . . The **Greater Burlington Industrial Corporation**, Burlington, Vt., has appointed **Charles D. Townsend** as its executive secretary . . . **John E. Kent** has joined the Engineering Division of **Arthur D. Little, Inc.**, Cambridge, Mass. . . . The appointment of **G. Herbert Metzger** as manager of project engineering has been announced by the **B. F. Goodrich Chemical Company**, Cleveland, Ohio.

Mr. Brainard

Charles R. Claxton has been named assistant chief engineer of the Nuclear Projects Division of the **Stone & Webster Engineering Corporation** . . . **William L. Wearly** has been elected president of the **Joy Manufacturing Company**, Pittsburgh, Pa. . . . **L. Daniel Fessenden** has joined the **Pfaudler Company**, Rochester, N. Y., as a member of the Engineering Department . . . **Clifford C. VanderWall** has been elected vice president in charge of manufacturing of the **Ansul Company**, Marinette, Wis. . . . The **Portland Cement Association** announces the election of four new members to its board of directors. The four are **Eugene D. Hill**, president, **Louisville Cement Co.**, Louisville, Ky.; **C. T. Fuller**, vice president, **Allentown Portland Cement Co.**, Allentown, Pa.; **B. B. Pelly**, vice president, **Olympic Portland Cement Co., Ltd.**, Seattle, Wash., and **L. T. Welshans**, general manager of the Cement and Coke Division, Standard Portland Cement Division, **Diamond Alkali Co.**, Cleveland, Ohio . . . The appointment of **Raymond F. Keegan** as liaison engineer in charge of New England sales has been announced by the Components Division of **Fairchild Controls Corporation** . . . Henry M. Taylor has been appointed manager of marketing for **Stromberg-Carlson**, San Diego, Calif., it has been announced by **Harold P. Field**, manager. **Stromberg-Carlson** is a division of **General Dynamics Corporation** . . . **Francis M. Guiney** and **William J. Conlon** have been appointed sales engineers by **Taylor Fibre Company**, Norristown, Pa.

Mr. VanderWall

Harold W. LeBoeuf has been appointed manager of intermediates operations and **Richard D. Rice** manager of rubber and polymer operations for the Silicone Products Department of the **General Electric Company**, Waterford, N. Y. . . . **Elmer Andrews** has been named manager of building services for Kodak Office, headquarters of the **Eastman Kodak Company** . . . **Karl W. Matthes** has been appointed divisional staff engineer for **Kaiser Steel Corporation's** General Planning Division. **B. E. Etcheverry**, director of general planning, has announced . . . **Elmer E. Kraig** has been appointed chief engineer of the newly-created Rock Products Department of **Hewitt-Robins, Inc.**, Glenbrook, Conn. . . . **Lewis A. Vincent**, general manager of the **National Board of Fire Underwriters**, New York, N. Y., has announced the appointment of **Kenneth J. Carl** as director of municipal surveys and **Robert A. Young** as special assistant to the director of municipal surveys. Coincidentally, **George J. Robinson** has been made senior assistant chief engineer and **George P. Stahl** has been named assistant chief engineer in the Chicago office . . . **D. H. Frey**, formerly director of the engineering research office of the **Ford Motor Company** engineering staff, has been appointed executive engineer, Ford Division Car Product Engineering, it has been announced by Ford Division Chief Engineer **H. A. Matthias** . . . The appointment of **Alvin J. Jones** as director of engineering of the **Motch** and **Merryweather Machinery Company**, Cleveland, Ohio, has been announced by **Richard W. Banfield**, president . . . **Robert W. Olson** has been named vice president-research and engineering of **Texas Instruments Incorporated**, Dallas, Tex. . . . **Frank C. Hawk** has been named Recold's representative for New York, New Jersey, Pennsylvania, and the New England states, it has been announced by H. T. Jarvis, president of the **Recold Corporation**.

Mr. Matthes

Expansion . . . The **C. W. Nofsinger Company** recently moved from downtown Kansas City, Mo., to new and more spacious quarters in Kansas City's Country Club District . . . **Fischer & Porter Company** has moved into a new modern office building adjoining their Hatboro, Pa., plant . . . A two-story, 40,000 sq. ft. office building is being constructed by **Palmer & Baker Engineers, Inc.**, at Mobile, Ala., as headquarters for the firm's international operations . . . **Soil Testing Services, Inc.**, has announced the opening of a new office and laboratory at 1827 North Harlem Avenue, Chicago, Ill. . . . **Sandberg-Serrell Corporation** expect to move into a new engineering building in Pasadena, Calif., early next year.

Killian, 13 Others, Sponsor EW

JAMES R. KILLIAN, JR., president of MIT, and newly appointed special assistant to President Eisenhower for science and technology, is once again serving as a sponsor of National Engineers' Week.

Dr. Killian is joined by thirteen other leading engineering figures in sponsoring the 1958 Week, February 16-22.

James R. Killian, Jr.

The other sponsors are: Allen B. DuMont, Major General Emerson C. Itschner, Charles F. Kettering, Clarence H. Linder, Thomas E. Murray, Granville M. Read, Rear Admiral H. G. Rickover, Royal W. Sorensen, Philip Sporn, David B. Steinman, Bertram D. Tallamy, Charles Allen Thomas, and Robert E. Wilson.

Planning and organizing for the 1958 Week at the state and chapter level is well underway this month, as indicated by the flow of orders for promotional material. The National Society began receiving orders for material in November.

Special mailings on letterheads carrying the names of the Engineers' Week sponsors have been made to a list of 753 industrial executives and over 800 newspaper publishers. The personally addressed letters, signed by Engineers' Week Chairman John L. Bahr, asked for industry and press cooperation in the events of the Week, and outlined the benefits in terms of public relations that could be received from such cooperation.

These letters were followed up by the mailing of a 12-page booklet to the industry executives. The booklet, entitled "National Engineers' Week," outlines a program for industry participation in the Week. Illustrated with photographs of actual Engineers' Week activities, the booklet has been designed to show the executive how his firm can participate and what it can expect to gain in return from its engineering staff and the general public. The booklet covers such suggested activities as poster display, the use of Engineers' Week material in advertising and in house organs, guided tours for high school students, career conferences, exhibits, and professional meetings and conferences.

Approximately 10,000 copies of the booklet are available from the National Society for distribution to industry through the state societies and local chapters. Free copies, in bulk quantities, may be ordered from the National Society. The National Engineers' Week Committee suggests that all chapters participate in the distribution of the booklets to industry. The booklets may be mailed to local industrial firms with a letter of transmittal from the state society or chapter Engineers' Week committee chairman. Sample copies of the booklets have been sent to all state societies and local chapters.

An order form describing promotional items offered by the National Society for the 1958 Week is carried on the opposite page. Order forms have been mailed to state society and chapter officers.

The theme for the 1958 National Engineers' Week is "Engineering Builds Broader Horizons."

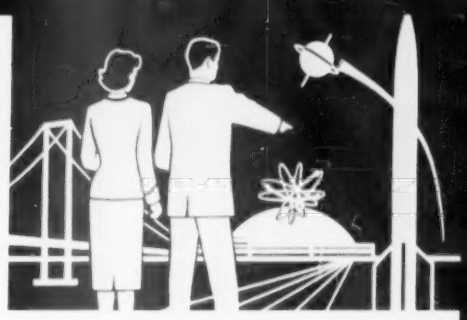
Free copies of this booklet, in quantity, may be obtained for distribution to industry from NSPE headquarters.

Attention is called to a typographical error in the Engineers' Week order form coupon appearing last month in the AMERICAN ENGINEER. Price of the banners was listed as $4 per 1,000, instead of the correct price of $4 per 100.

Pittsburgh EW Committee

Engineers' Week Committee members of the Pittsburgh Chapter of the Pennsylvania SPE get down to business in organizing their group's activities for the week of February 16-22 in the Pittsburgh area. Seated, l. to r., are: William D. Jamison, Jr., publicity co-chairman; Jack Whitford, Public Relations Committee chairman; and Harry C. Davis, Engineers' Week co-chairman. Standing, l. to r., are: Joseph A. Simonyak, professional engineers building co-chairman; Eugene L. Recchion, speakers bureau co-chairman; Arthur P. Jentoft, inter-society and intra-society relations co-chairman; Russell M. Jenkins, second vice president and director of public relations; and Charles A. Gunn, transportation facilities co-chairman.

Use these aids for **NATIONAL ENGINEERS' WEEK...**



HERE ARE the basic promotional aids that will give dramatic impact to your program—the kind of impact that will result in public attention in local newspapers, and on radio and television programs. All these aids have been expertly prepared to portray engineering as building broader horizons for all of us. Use the handy order coupon below.

1. **ANIMATED TV FILMS:** A set of five 1-minute TV films, in animated form, designed to dramatize the 1958 Engineers' Week theme. Produced under expert supervision to meet network standards, these films feature tributes to civil, mechanical, electrical, and chemical engineers. All films will qualify for public service TV time during station breaks. A set of these films will give "TV impact" to your Engineers' Week program. Price: Set of five films, $25.

2. **"ENGINEERING BUILDS BROADER HORIZONS:"** A 15-minute tape recorded radio program telling the story of how engineering developments are behind every phase of the International Geophysical Year. Radio network performers dramatize the contributions of the engineer to the current scientific exploration of our planet. Excellent for use on public service time. Price: $6 each.

3. **LAPEL BUTTONS:** A high-quality lapel badge featuring the Engineers' Week poster design in bright blue on a white background. May be distributed to high schools, science clubs, and other groups. Each chapter or state society can set its own price for button sales. Prices: 100 to 500—15¢ each; 500 to 1,000—10¢; 1,000 to 3,000—7¢; 3,000 to 5,000—5¢; and over 5,000—4¢.

4. **SET OF SEVEN TV SLIDES:** Obtain extensive TV coverage through the Week with these slides displaying poster-type art work and printed copy calling attention to engineering. May be used during all TV station breaks as public service announcements. Price: $10 per set of 7 slides.

5. **POSTERS:** Colorful 9 x 11-inch pasteboard posters carrying the 1958 Engineers' Week design and theme. This is the basic promotional item for calling attention to the Week. Use on bulletin boards, in window displays, school exhibits, etc. Large size (18 x 22 inches) also available. Prices: 9 x 11, $4 per 100; 18 x 22, $5 per 100.

6. **PAPER BANNERS:** Excellent for display use. Three feet long by 6 inches wide. Has poster design and words "National Engineers' Week" in color. Price: $4 per 100.

7. **NATIONAL ENGINEERS' WEEK SEALS:** Use these brightly colored seals on all office mail from now through February 22. Poster design printed on 1½-inch gummed paper. Price: $3 per 1,000.

8. **NEWSPAPER MAT STORY ON ENGINEERING CONTRIBUTIONS TO THE INTERNATIONAL GEOPHYSICAL YEAR:** A feature article on how engineering developments in instruments, rocketry, and other fields are the basis for scientific study of the world around us during the IGY. Prepared on mat, ready for immediate insertion in daily or weekly newspaper. Price: 50¢ each.

9. **NEWSPAPER MAT STORY ON ENGINEERING AND OUR USE AND SUPPLY OF WATER:** A feature article on how engineers are involved in such problems as water purification, irrigation, flood control, hydroelectric power sites, harbor development, large city reservoirs, etc. Prepared on mat, ready for immediate insertion in daily or weekly newspaper. Price: 50¢ each.

10. **LOGOTYPE:** A metal cut of the 1958 poster design to insert in advertising, special sections of newspapers, industrial house organs, magazines, and other printed matter. All state society and chapter publications should have one. Price: $1 each.

11. **"ENGINEERING AND THE ATOMIC ERA:"** A re-issue of the 15-minute tape recorded radio program distributed last year. Just as timely this year. Network performers dramatize the engineering efforts behind atomic power, radioactive isotopes, and other applications of nuclear energy. Price: $4 each.

ORDER YOUR AIDS NOW!

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Please rush me items indicated. I enclose a (check) (money order) in the amount of $. I understand remittance must accompany order.

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1. One minute TV films @ $25 per set.
2. Radio tape, "Engineering Builds Broader Horizons," @ $6 each.
3. Lapel buttons: 100-500 @ 15¢ ea.; 500-1,000 @ 10¢ ea.; 1,000-3,000 @ 7¢ ea.; 3,000-5,000 @ 5¢ ea.; over 5,000 @ 4¢ ea.
4. TV slides: Set of 7 slides @ $10 per set.
5. Posters, regular size, @ $4 per 100.
   Posters, large size, @ $5 per 100.
6. Banners @ $4 per 100.
7. Seals @ $3 per 1,000.
8. Newspaper mat story on engineering contributions to IGY @ 50¢ ea.
9. Newspaper mat story on engineering and use and supply of water @ 50¢ ea.
10. Logotypes @ $1 ea.
11. Radio tape, "Engineering and the Atomic Era," @ $4 ea.

Bell

(Continued from page 14)

ties inherent in most of them. This on-the-job training will have a many-fold payoff in that we can expect increased awareness of business and administrative difficulties aside from the familiar technical problems. Following naturally will come an enhanced sympathy or empathy along chains of command in all directions and on all levels, with resulting understanding, cooperation and team spirit, all redounding to the benefit of client, company and employee.

Policy Number Five

Urge civic and professional society activity and insist upon personal responsibility and loyalty to company and supervisor.

Through the ages the market place, the bazaar, the town square, were the centers of exchange of news and views, the trading of tangibles and thoughts, the sharing of materials and information. As urban living expanded and greater portions of the unpopulated areas of the world were colonized and settled, the easy informality of face-to-face conversation with people whose interests were mutually shared became more difficult. Increased correspondence throughout remote sections of the earth resulted and, consequently, the newspaper business throve and expanded. The need for specialized journals dealing with specific areas of thought became apparent and, as a natural adjunct, the necessity for clearing houses for the divergent theses, hypotheses, opinions and deductions of the people involved in any particular branch of science or commerce. Since the days the guilds were first founded artisans had banded together for, among other reasons, the exchange of thoughts on how to accomplish a task in a more efficient manner, with a superior result . . . and so the professional societies were born.

A man may have need for a particular piece of information. So far it has not appeared in the literature. His own research and experimentation have not exposed this one small, elusive fact which may permit him to make a world-shaking contribution. Another man, on some other tangent, with a totally different objective in view, may have uncovered this very piece of, *to him*, useless information. Bring them together and incalculable good may be produced. Thus the professional societies serve as the meeting place, the arena, the forum—catalyst, if you will—for an exchange of thoughts, dreams, ideas and concepts and we have come full circle.

The symposiums, conferences and conventions of today serve the same purpose as the market places and bazaars of yesteryear. Here men meet, albeit not to barter merchandise. Their stock in trade is the product of minds. Here they can examine the latest information and results of experiments, and present to each other the missing pieces to complete some precedent-shattering scientific jigsaw puzzle.

Here at Packard Bell we encourage our people to participate in the activities of their professional societies. The man who is most knowledgeable of the latest developments in his own field is the most desirable and valuable to any company. This is particularly true in our industry, where so much well-deserved stress is placed on research and development, and up-to-the-minute awareness of the latest contributions to the state of the art may make all the difference in the world where the success or failure of a project is concerned.

Packard Bell employees are also urged to participate in civic and community functions because a happy employee is, of necessity, a well-rounded employee and good citizenship is vital to an individual's good character. There is also the not small matter of public relations, since an employee who is a credit to the community in which he lives, by the same token accrues credit to the company for which he works.

Active membership in professional organizations is as important to an engineer as his job and his home. Allegiance to family, company and supervisor reflects a man's character. Allegiance to professional or civic organizations reflects his stature.

E. Finley Carter, director of Stanford Research Institute, presented a paper a few months ago on the subject "Idea Acceleration." His theme was the chain reaction of ideas. "I am convinced," he said, "that the environment that keeps men and women productive and dynamic is one created by interdependence on ideas, new ways to do things, unusual approaches, a gimmick to be tried out—anything that leads to achievement through the exercise of idea reaction."

That gem of thinking is the *raison d'être* for professional groups. Interdependence of ideas. Exchange of ideas. Chain reaction of ideas. Mr. Carter also referred to this process as "cross fertilization" and added a word of caution. It seems one man was heard to say that he had been cross-fertilized in a bull session and had been in labor ever since!

Policy Number Six

Develop enthusiasm for joint effort and reward sharing the load with a sharing of profits.

"No man is an iland intire of it selfe . . ." wrote John Donne a long time ago. It pertained then and pertains now. The day of the hermit is over and the time of the team is here. The term "project team" is in common use in our industry and it means just exactly that—a *group* of people, all contributing their special scholarship, experience, talents and efforts to the successful conclusion of an assignment.

We have discussed the group system as it affects the professional growth of an individual. It has an equally important effect upon his personal growth. Team effort in business is as vital as it is on the baseball diamond or football field. Harmony at the creative level, with several minds collaborating toward a common goal, cannot operate in an atmosphere of suspicion, jealously or temperament. Conversely, an engineer cleanses himself of these growth-retarding faults when his enthusiasm for another's contribution equals his pride in his own.

There is very little management can do to create this environment of mutual admiration and team spirit except to practice it, encourage it and reward it, and, speaking of rewards, we have left a vital point for the very last: the matter of financial reward for a job well and truly accomplished.

At Packard Bell we reward sharing the load with a share of the profits. Ten per cent of annual net earnings *before* taxes is set aside for distribution in the form of profit sharing, which is invested in company stock, so when the engineer working beside you comes up with a lulu of an idea, you're not about to be unhappy. That idea becomes yours as much as his because it belongs to the company and the company, to whatever extent you desire and deserve, belongs to you.

Quite a few tubes have burned out since 1927, but the slap-happy money days we've experienced since 1942 have not changed the basic principles of the Packard Bell creed. The satirist's engineer, reaching for gold, will not come out empty-handed by following this doctrine and if he has capacity to match his opportunity, there can be plenty of glory, too.—***End.***

With Our Members . . .

The president of the NYSSPE, Franklin J. Johnson, was guest speaker at the October meeting of the Nassau County Chapter. The meeting was an open meeting with invitations extended to all registered P.E.'s in Nassau County as part of an energetic membership drive by the Chapter. President Johnson himself is a resident of Nassau County. Shown, l. to r., are: Zone Director Francis X. Merklin, State President Franklin J. Johnson, and Chapter President A. Sol Uman.

Washington Society Holds Annual Meeting

The Washington SPE held a highly successful annual meeting recently at Seattle which featured an address by Garvin H. Dyer, National Society president, entitled "A Profession Comes of Age."

The first day of the two-day affair was devoted to routine business, with State President Walter S. Gordon presiding over the sessions. During a luncheon, presided over by National Director Robert H. Lochow, members were welcomed to the city by Mayor Gordon S. Clinton. John R. Wallace, Jr., Seattle Chapter president, spoke to the group on "The Challenge."

Prior to President Dyer's banquet address, presentation of the "Distinguished Service Award" was given to L. R. Durkee, NSPE vice president.

The final day was devoted to explaining and discussing the new standing committees and the creation of functional groups at the state level. An ambitious membership promotion campaign was outlined by Mr. Lochow, chairman of the Washington Membership Committee.

The next annual meeting of the Washington SPE is scheduled at Spokane.

. . . more state society news on pages 37 and 39.

Present Registration Certificates in Penna.

Certificates of registration were presented to new professional engineers of Beaver County when the County Chapter of the Pennsylvania SPE met in November.

Iowa Society Seeks Executive Director

The Iowa Engineering Society's sixty-ninth year will be marked by engagement of a full-time executive director. A vote of the membership has approved the position and authorized a dues increase to support the salary and expense of the director.

Engineering Dean Speaks to California Chapter

Engineers should exercise leadership in establishing the needs of society and they should not accept responsibility for community decisions without corresponding authority. These were the words of Dr. L. M. K. Boelter, dean of engineering, U.C.L.A. in addressing the San Fernando Valley Chapter of the California SPE recently.

Speaking before 120 members and guests at the chapter's Young Engineers' Night meeting he stressed the need for the engineers's methodology in the solution of civic problems in our highly technical civilization. He exhorted the young engineers to set high professional, moral, and ethical standards for themselves, and to constantly influence society for the conservation of natural resources.

Also speaking was Stephenson B. Barnes, of Tolucca Lake, a long-time Valley resident and structural engineer member of the Board of Registration.

Ohio Membership Workshop

NSPE Membership Representative Michael Blew, standing, spoke recently at the Membership Workshop of the Ohio SPE held at Ohio State University. Twenty-four out of the state's twenty-seven chapters were represented at the session—plus six student chapters.

Alphabetized by States . . .
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Michigan Society Plans NSPE Spring Meeting

NSPE Executive Director Paul H. Robbins met wth several members of the Michigan Society's Planning Committee in November at East Lansing, Michigan, to review the progress made so far and to make suggestions for the NSPE February spring meeting. All housing, meetings, and meals are scheduled in the seven story multi-million dollar Kellogg Center for Continuing Education built in 1951 and expanded in 1956.

The building provides ultra-modern hotel accommodations and was specifically designed for educational conferences. There are twelve conference rooms, an auditorium seating 350 persons, the State Room (public dining), a cafeteria, several private dining rooms, as well as the Big Ten Room which will seat 500 diners comfortably.

The Michigan Committee consists of the four Michigan national directors; four members from the Grand Valley Chapter (Lansing and vicinity); a representative from the School of Engineering; a representative from the Department of Continuing Education, Michigan State University, and the executive director of the Michigan Society. The Committee had their first meeting in March which Executive Director Robbins attended. Subsequent meetings were held throughout the summer and fall.

Spring Meeting Committee

NSPE spring meeting plans were discussed recently by the above group. Shown, l. to r., are: Kenneth Fishback, Grand Valley Chapter vice president; Wayland Smith, School of Engineering, MSU; John W. Kushing, Grand Valley Chapter president; NSPE Executive Director Robbins; Fred L. Hendricks, committee chairman and national director; Robert Rentschler, coordinator, MSU's Kellogg Center, and Richard Cosgrove, MSPE executive director.

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By Mrs. Harry G. Kennedy, Chairman of the Ladies Auxiliary Advisory Committee.

The Auxiliary to the Central Chapter, Phoenix, Arizona, started its fall program with a talk on "Parliamentary Procedure" by Mrs. James E. Hastain. The meeting was held in the home of Mrs. O. B. Farley with Mrs. J. D. Bullock as program chairman. All wives of ASPE members were invited to attend.

The Auxiliary to the Southern New Jersey Chapter was formed in April, 1957. Membership response was very favorable. The officers are: Mrs. William R. Cattell, president; Mrs. Christian F. Roger, Jr., vice president, and Mrs. Willard Anker, secretary-treasurer. Highlights of their program for the year are: February, "Engineering Education," Dr. Elmer C. Easton, dean of College of Engineering, Rutgers University; March, "Your Voice is You," contributed by the New Jersey Bell Telephone Company, and April, Guided Tour Through RCA Hall of Progress.

"The Wives" of the Albuquerque, New Mexico, Chapter have been very busy this fall. A coffee was held at the home of Mrs. Robert E. Hopper honoring new members, prospective members and past presidents. Their October meeting was a style show and luncheon held at La Hacienda, Old Albuquerque. On October 28, the "Wives" were entertained with dinner at the Fez Club by the chapter members. This is their once-a-year combined meeting.

The Auxiliaries of West Virginia met during the annual meeting of West Va., SPE in Huntington. Mrs. Ira Pitsenberger, wife of the state president, presided, and Mrs. H. G. Kennedy was the guest speaker. She used a flannelgraph showing the organization and progress of the Ladies Auxiliary Advisory Committee. The meeting was followed by luncheon at Guyan Country Club and a delightful trip through the Huntington Art Gallery.

This chairman would like to commend the editor of The *Pasadina Professional Engineer* for publishing the magnificent article written by Mrs. Roy Fredin, president of the Wives of Professional Engineers. The article is a summation of *Engineers' Wives 1957*, showing progress of, benefits from and suggestions to auxiliaries and their members. The "Christmas Party for the Whole Family" under the direction of the wives will be held December 6 at Rancho Hillcrest. Dinner, games, stunts and a pinada loaded with gifts are on the evening's agenda.

***Engineers' Week* is just around** the corner—have you offered your services to your Chapter Program Committee?

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Symposium

(*Continued from page 30*)

prepare for registration examinations. We encourage their taking available short courses in preparation for examinations, and pay their registration fees in such courses. We finance their expenses while taking registration examinations.

We encourage participation in civic activities. Many of our young engineers are on committees of the Association of Commerce, and are granted time from their assigned duties to attend such committee meetings. In a recent case, we encouraged membership on a school board in a nearby community where there has been unusual friction and lack of firm policies by the school board.

From my experience, I do not believe that young engineers can complain of lack of professional development opportunities. Nor do I believe that they can complain of lack of professional attitude toward young engineers by the employer.

Most offices with which I am familiar are providing good working conditions for professional employees. Good working conditions are, in my opinion, an absolute "must" if an office is to retain its employees. In this day and age of abundant employment opportunities, good working conditions are more important than at any previous time.

If I may again use our offices as an example, we provide comfortable air conditioned space. We buy every item of equipment that assists in good production. Frequently we are asking our employees, "What additional equipment would you like to improve your comfort and your productivity?"

We find that our library is a very popular place because we provide in it not only technical literature and technical books, but we provide certain non-technical magazines and financial reports, such as "The Kiplinger Letter," which have been asked for by our employees. . . .

We grant all employees two weeks vacation with pay after one year of service. Associates and employees with many years of service negotiate arrangements for longer vacations. We have granted special leaves for our engineers to attend military program participation.

We permit absence occasioned by illness without deduction from salary provided the absence does not exceed fifteen days in any calendar year. With associates and employees of many years of service, this policy is extended and we have frequently permitted absence accumulating as much as four to six weeks in a calendar year without salary loss to the employee.

We have an insurance program which provides not only for the employee's hospitalization and medical benefits, but for those of his family. This has been a most attractive program, voluntary and not compulsory on the part of the employee, but generally unanimously accepted by the employees because the office pays one half of the insurance cost with its favorable group insurance rates. . . .

Economic problems concern young engineers perhaps more than any one other problem or subject. Employees today seldom accept employment to gain experience at the expense of economic status. Young engineers are keeping themselves posted on salary levels and like items. The adoption of fees and salaries schedules by professional and technical societies has proven beneficial to both employer and employee.

In our offices, we periodically review salary schedules to insure our compliance with the state professional engineering society's recommended schedule of salaries. Perhaps I, personally, am more conscious of this than some employers because of my historical record of service to professional societies and in behalf of a high level of professional ethics and of salaries. . . .

Unionism is not prevalent in private practice in our area. It is threatening, however. Unionism offers young engineers only one thing—it appeals on the basis of improving economic status through forced, higher salaries. Young engineers, in general, do not want unionism. Unionism is, generally, frowned upon by engineers at all economic levels. The exception, in our region, is in the City of Chicago where certain public bodies have yielded to unions. Only good working conditions and satisfactorily high salary schedules will successfully combat unions over the long-range period.

A growing practice by certain public bodies, and by certain industries, in requiring construction contractors to perform certain of the engineering services on construction projects, is opening the door to more unions in engineering. It becomes futile for professional engineers to resist unionization where a contractor's operations are otherwise entirely unionized and where the professional engineers represent such a very, very small number in regard to the number of contractor's employees. This situation is now manifesting itself on such projects as toll road construction.

I believe that I can state from my years of experience that engineers just don't want unions. Where unions do exist, they exist because of low salary schedules, or, secondarily, from unwholesome working conditions and an unwholesome employer attitude toward employees.—***End.***

About the Author . . .

Alfred J. Ryan, who served a term as vice president of the National Society in 1953-1954 from the Southwestern Area, is a consulting engineer at Denver, Colo. Born at Denver in 1908, he graduated from the University of Colorado in 1933 with a bachelor of science degree. He also received a degree in civil engineering from the University of Colorado in 1937.

Mr. Ryan was a director of the National Society in 1951. During 1948 he was elected president of the Professional Engineers of Colorado, and later served as president of this group. He is a member of Tau Beta Pi and Chi Epsilon fraternities.

With few exceptions, an employer who is engaged in private engineering practice has a keen interest in promoting the professional development of his employees. To the extent practicable, he will provide sound experience within his field and will encourage outside activities that will lead toward professional development. Because he is operating a business—rather than a school, there are times when repetitions of the employee's previous experience are essential to the maintenance of his practice. The employer's ability to continue the pay checks is important to the employee's wife—if not to the employee.

Unfortunately, many young engineers feel that a substantial period of time "on the board" as an inspector—or at a similar activity—falls into the pay check category and does little toward professional development. Any experienced engineer knows that this is not true. I have yet to know a good design engineer who is not a good detailer because the detailing provides the background upon which intelligent design is based.

To assure professional development of his employees, the employer must provide a variety of experience and competent guidance to extend the learning process. He

must also, however, be sure that the movement from one step to another is not rapid enough to jeopardize the development of sound judgment. To a large extent, the employee's professional development will depend upon his own reaction to apparently tedious assignments. If he is rebellious because of a feeling that the "old man" is using him, he will gain very little. If he will approach the task in an effort to learn how and why—if he will whet his intelligence by trying to find better ways—and if he is patient enough to realize the experience value of the tedious work—he is on his way.

In general, I believe that the relatively small private practice provides a better opportunity for professional development than do large organizations.

A private practice with a staff from 10-60 provides for close contact between employee and employer and, therefore, allows understanding and direct guidance. The activities are usually less channelized than in large offices and thereby provides a greater variety of experience.

The experience to be obtained from employment in any size engineering office can develop an excellent technician, but it alone will never develop a professional engineer. A successful engineer must attract and retain the respect of laymen. To do so he must develop many facets of his personality. This, too, requires experience but of a type for which there are no better fields than civic activities and engineering organizations.

Here, again, both the employee and the employer must contribute. The employer must foster and encourage such activity—including contribution of a reasonable amount of the employee's paid time. However, an employee who is active only during paid time is devoid of the necessary interest and is "gold bricking" instead of developing. Many extra-curricular activities are scheduled to correspond with the employee's free time and his own contribution of some free time—and energy—will pay big dividends. It will also discharge some of his professional obligations.

Any member of NSPE must believe that one of the greatest advantages of registration is an opportunity for public recognition of his status. Employers should certainly make registration a condition of advancement and any employee who resents this requirement lacks some of the qualifications for attaining professional stature.

While physical facilities vary to some extent among various organizations that employ engineers—the variations are not related to the size of organization. It is unusual for this item to become a matter of disagreement between employee and employer. All employers are aware that efficiency and adequate facilities are directly related.

Theoretical hours of employment in the Rocky Mt. area have been reduced from 44 to 40 hours per week during the last twenty years. Five eight-hour days are the usual custom. Vacation and sick leave policies are one of the most variable factors in engineering employment. Few men in private practice feel that they can match the leave plans of the Federal Government. The plan in our office is believed average and provides for one day of annual leave for each month of employment, starting with the first month. Terminated employees are paid for accumulated annual leave, regardless of the reason for termination. Sick leave is accumulated at the rate of one-half day for each month of employment, but no payments are made except for actual sickness. Because the fund accumulated for sick leave is rarely depleted, our employees are usually paid throughout a period of illness even if such period materially exceeds the amount of sick leave accumulated by the individual. This plan seems to be considered fair and adequate by our employees and by most of those whom we have interviewed in regard to employment.

The economic problems of young engineers—in fact, of all engineers—has been a subject of considerable discussion over a period of which is longer than most of us can remember. My ideas on this subject can best be expressed by relating an experience with a good friend who is also a very good professor of engineering. For years he has complained bitterly about engineering salaries. He was dubious of the contention that engineers in private practice are in favor of high salaries—not only because of their interest in the welfare of the profession—but because increased salaries should also increase the net revenue from their own operation. He grudgingly conceded that private practice could do little about the salary situation because it represented so small a portion of all engineers. He finally conceded, however, that the organizations which hire large numbers of engineers are the ones who establish salary levels.

Recently he accepted an opportunity for summer employment with a large firm—and in a large engineering office. He returned a disillusioned man. His new opinion was that among engineering employees only one of ten engineering graduates become real engineers. The others remain trained technicians—with no initiative—and apparently lacking in both desire and ability regarding intelligent application of their knowledge or sound judgment in solving the problems of their employer. They were *plodding followers* applying their knowledge only as directed by the ten per cent who were engineers in the true sense.

The professor is now deeply concerned about the adequacy of engineering education and confused about proper compensation for engineering employees. From the standpoint of private practice, he concedes that the employer will endeavor to obtain a fair fee. He also understands that an office in which the total base salaries paid to non-overhead employees exceeds one-half of the gross income will not long remain in business. He concedes that the answer to better salaries for engineering graduates is the production of a greater percentage of engineers and fewer plodders, but he doesn't know how this is to be accomplished. Neither do I.

In the meantime, some salary increase is being provided through the law of supply and demand. As usual, the law of supply and demand produces some lopsided circumstances and some unfortunate conditions—but the end results are for the better.

Many engineers in private practice endeavor to create incentive and to share their luck—good or bad—with their employees, by profit sharing plans. For the young engineers, profit sharing is usually in the form of a bonus arrangement. Bonus plans seem to enjoy enthusiastic endorsement by both employee and employer, but the administration of such plans can create a number of problems.

If the problem of unionism exists in private engineering practice—which I doubt—it must be in only the very large organizations. The conditions that foster unionism do not exist in most private practices. These conditions include grade classifications with large numbers in the lower classifications; little or no direct communication between the executives and the total personnel; lack of opportunity for professional development; and a predominance of individuals with little or no desire for professional recognition.

These conditions exist in varying degrees in many industrial and governmental organizations. It is conceivable that some of them could exist in large private practices, but it is not conceivable that they could exist in the average or small private practice. This conclusion is apparently verified by the locations of existing union problems. . . . **End.**

About the Author . . .

Mr. McFee

After receiving his bachelor of science degree in mechanical engineering from Ohio State University in 1940, John A McFee spent five years in the Army as a commissioned officer in the Corps of Engineers. Upon his release from the service, he became a design engineer—first with the Austin Company (1945-1948) and next with the firm of William A. Brown (1948-1950).

From 1950 to the present, Mr. McFee has been employed by C. Warren Bogan & Associates as their chief mechanical engineer. He is in charge of all mechanical work handled by the firm. Mr. McFee is currently a major in the Reserve Corps of Engineers, U. S. Army.

THE professional engineer with ten years and more experience and who is well established in the profession has a definite responsibility to the young engineer. My definition of the "young engineer" is the graduate pursuing his profession in the five to ten year period immediately following graduation from a college or university. Just as the family is responsible for the training of children in a religious and moral background, discipline and basic education, so is the elder engineer responsible in the same sense to the young men of our profession. The family offers protection, basic needs of the child such as food, clothing, shelter, fosters encouragement, gives guidance until such time that the child leaves home and goes into the world on his own. An individual properly armed with this background is a better person, more sound, more adaptable to situations and more apt to become a leader in his chosen endeavor. The young graduate who is encouraged, guided, and disciplined in our profession will fast become a credit to our field. . . .

Proper guidance by those in authority is essential to development. Explain why things are done as they are. This gives the young engineer a background from which he can build on or repudiate with the proper knowledge. Guidance is of necessity very important to prevent the young engineer from going off on what appears to be logical tangents but what experience has proven to be in error. Management can eliminate frustrations and stagnations by clearly defined policies. It is important that proper allocation of responsibilities be defined in order for the young engineer to know where he fits into an organization.

Recognition of a person's adaptation to consulting field at an early stage is important. Many individuals are not attuned to this field and it is to everyone's benefit that this discovery be made at the earliest possible stage and so advise the individual. This will prevent a lot of unfortunate and disagreeable situations and help to channel talent in the proper direction.

In the small consultant office, many of the foregoing steps are automatically followed as a necessity. Many frustrations are involved in operating the small consulting office adding to the difficulties of management to present a unified program of development for the young engineer. He has the responsibility of outside study on his own to learn a lot of the practical applications of his college education.

Salaries are definitely a reflection of fees in the consulting field. It is extremely difficult to maintain fee schedules as set forth by the societies of most states in the Washington, D. C., area due to a standard established by the Government. A standard maximum fee for A&E work of six per cent was arrived at by a committee recommendation made to Congress in 1939. This fee is for design and specifications and pertains to new as well as remodel work. However, the administration of job contracts with Government agencies, which includes preliminary design submittals, preliminary cost estimates, specification preparation in three and four copies for review, job conferences, reviews, design analysis submission, detailed final cost estimate etc., increases the costs unproportionately for a six per cent fee. Coupled with the forementioned problems are those problems of starting and stopping jobs awaiting necessary decisions. This is always wasteful and adds to job costs. Organization is the only method of overcoming these obstacles to any degree. Job reviews by agencies have a detrimental effect on designers. Often, in mechanical and electrical design problems, the engineer is completing his design while the architect is doing the same and the two must finish simultaneously to meet a "deadline." It is impossible, under such conditions, to have everything checked and coordinated when submitted. Our experience has been that no matter what is submitted, criticism can be expected, even though minor. After so long a time, designers come to the conclusion it will be wrong no matter what is done, so let the reviewing agency check and tell us what they want. This is, of course, an improper attitude but nonetheless, one that develops. It is also detrimental in that it breeds a non-aggressive or hopeless attitude on the part of the designer. . . .

Reasonable working conditions are expected wherever an individual works. In this day and age, an office is rightfully expected to be clean with windows washed, floors swept, waste baskets emptied, air conditioning in summer (for efficiency) and regulated heat in the winter. An organized office is impressive and effective from an operating standpoint. A place for everything and everything in its place. This is a difficult process for the small office as everyone must use files and not everyone seems to know the proper place of return. The physical arrangement of the small office can also add to confusion. We have found from experience that operations carried on in a number of separated rooms has some definite advantages where no coordination is required by the separate trades involved and each trade is carried on within a definite area. However, on integrated projects requiring contact, the physical separation has given some difficulties in getting the personnel to properly coordinate with one another. . . .

There is no indication of unionism in Washington area at this time. All consulting firms are small and the small consulting firm will be the last place to be attacked. Industry will be first and large consulting firms second. Organizations with concentrations of technical draftsmen are fertile fields to union organizers. Young professionals in this group are apt to be caught in movement and influenced unless our organization's ideas have reached them. Consultants are obligated to assist in struggle of engineers in industry against unionism. If that field is conquered, our field is bound to fall. . . .

The time has arrived when the stand of the engineer on unionism must be definite. Just as the United States has been forced to chart definite paths to fight the threat of Communism, so must the engineer form his battle line. A middle ground or neutral attitude can no longer exist. Each and every professional engineer is obligated to recognize the threat to his chosen field and take steps whenever and wherever the opportunity presents itself to combat unionism in the engineering field. ***End.***

(Please turn the page for final paper.)

About the Author . . .

Mr. Lowe

Born September 17, 1928, at Gainesville, Florida, Thomas Marvell Lowe, Jr., attended the Alabama Polytechnic Institute from which he received his bachelor of science degree in civil engineering in 1949. Immediately following his college graduation, Mr. Lowe joined Michael Baker, Jr., Inc., of Jackson, Mississippi, where he is still employed. In this firm he began his engineering experience with two years heavy construction engineering. Mr. Lowe next became and remains at present the firm's project and design engineer; his duties consist principally of designing large mapping projects and highway designs.

Mr. Lowe is a member of the NSPE, Mississippi SPE, and ASCE of which he is the director of the Jackson Branch.

THE young engineer of today, like all highly educated men with a true dedication to his work, wants and expects professional recognition in his chosen field. The opportunity for progressive professional development ranks high on the requirements of any engineer who aspires to make his ultimate contribution to society and his profession. He has a definite desire to feel that he is making a necessary contribution and further that he is a part of a closely knit organization, thought of as an individual, a professional engineer, and not a necessary evil that must be endured.

It is realized that all ideas, designs, or suggestions of a young engineer can not be put into effect—but the fact that he *is* thinking and formulating new ideas should be highly encouraging to his employer. At such time as an employer attempts to regulate thinking and refuses to listen to the suggestions of young engineers, professional development of both individuals has virtually ceased. Each engineer needs some phase of work in which his decisions will be adhered to and followed, and only in this way can he have a true feeling of responsibility and accomplishment. The desire on his part to advance and ultimately gain increased responsibility, prestige or importance and in turn increase his value to his employer, is largely formulated in the first five years of employment. . . .

To view the problem of economic complaints among engineers, we should try first to determine, if possible, which engineers are dissatisfied as a group. Certainly the intense demand for young graduates has forced starting salaries higher. If a firm is to obtain any young graduates, they must offer at least the average salary. At the present time, this is approximately $5,100 per year or higher. Let us assume then, that competition for men will determine these salaries, and there is little an individual firm can do except to meet these demands.

Next, however, we should begin to think in terms of the professional engineer who has from four to ten years' experience. Many men in this bracket are facing or have faced within the past two or three years the situation of having young graduates assigned to assist them whose salaries are so close to their own that a completely demoralizing effect is taking place in some organizations.

Together with the problems created by higher starting salaries, additional problems are created by the high wages of skilled workers. It has for years been a reluctantly accepted fact that a good brick layer, electrician, plumber or any other skilled worker would have a higher yearly earning than perhaps the resident engineer on a project. The engineering profession, as a whole, has lagged far behind the other professions in seeking higher salaries and better working conditions; and, as we can easily see, the trades have now surpassed a great portion of our engineers.

The recognition of this problem by employers, especially those in private consulting firms, is the first step to be taken before any constructive progress can be made. The intense demand for experienced engineers, created by the new interstate highway program, is doing some good toward remedying this situation. If employers expect to increase the salaries of its young graduates, which it will have to do in order to hold them, they must first take steps to broaden the spread between the experienced and the inexperienced engineer. Certainly this competition for young engineers will, in the long run, help the more experienced; but during the period of readjustment and "catching up," there will perhaps be many men who will change jobs and others whose low morale will definitely affect their attitude and their work.

It is true that engineering fees, in many instances, have not increased in proportion to the salary requirements of today's engineers. It is felt that all effort possible should be exerted to adjust fees in these areas in order that salaries may be increased accordingly.

Assuming that fees are sufficient, one very good approach to more money for the experienced engineer would be to inaugurate a profit sharing or bonus plan and reward each engineer in comparison to his experience and the contribution which he is making. Many small firms have found that this is a most satisfactory arrangement for both the employer and the employee. When the employee who has no share in ownership is permitted to share in the profit of that organization, it has been found that his interest and quantity of work produced is materially increased.

Many firms both large and small have recognized the economic problems of its experienced engineers and have already taken steps to adjust their salaries to a level more commensurate with their ability.

The problem of "unionization" or "collective bargaining" within the engineering profession has received much attention in the last two or three years. While this problem is becoming more and more intense as time progresses, it is certainly not a new one.

Some engineering employees have been represented by unions for at least twenty or twenty-five years and perhaps longer. The alarming fact to many of our members has been the great increase in the number of engineers who either favor collective bargaining or state that they are not opposed to it. In a survey of the ASCE membership, approximately forty per cent of the replies indicated that they were not opposed.

It appears that if a percentage of this magnitude exists among civil engineers, the figure for all engineers would probably be somewhere in the same range.

It is impossible to conceive of professional engineers even considering unionization if proper relations exist between employers and employees. In addition to relations commensurate with professional employment, the problem of salaries must be approached from an objective standpoint. It is felt that employers who are in a position to do something about it should recognize that a problem exists and review their policies to determine if improvements can be made.

It would be well for us to review some of the reasons that the Engineers Joint Council has found to foster collective bargaining among engineers. These reasons have been broken down into three primary groups: Professional, Personal, and Financial. . . . —***End.***

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What's New

This column describes new products of general interest to professional engineers. For further information, circle the item number on opposite page and mail to the AMERICAN ENGINEER.

These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.

TUBE-PIERCE MACHINE — Item 30

A new tube-piercing machine, which pierces round and/or irregular shaped holes at production speeds ranging up to 600 tubes per hour, has been designed. Accuracy is assured by absolute control and support of the tube during the piercing action. The mandrel remains permanently rigid with no deflection during the cut.

SPRAYED-CONCRETE FINISH — Item 31

A new cold-glazed concrete material called "Vitricon" has been announced. It is based on a tough, durable concrete formula, and is rapidly sprayed on all types of masonry surfaces, as well as marble. Once Vitricon hardens, it forms an integral bond with the underlying material, and has a glazed surface which maintains its luster indefinitely. Maintenance is never required under normal usage. A large number of color combinations are available, depending on the pigments added to the mixture.

MINIATURE SLIDE RULE — Item 32

Tie clasps that identify a man's profession or occupation are not new, but this one is a working miniature slide rule, precision manufactured and accurate, it is claimed. A creation of Zinn Originals, the gadget is fully calibrated, with scales A, C, and D. Even when not used as a tie clasp, it may be clipped to a shirt pocket and carried for handy use.

PORTABLE DRAFTING MACHINE — Item 33

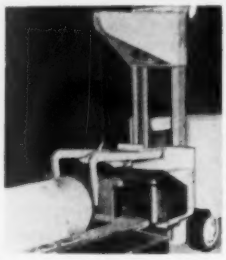
A new-design portable drafting machine, so compact that it can be folded jackknife-style to fit in the pocket when detached from its drawing board, has been introduced for use in office, home, classroom, workshop and in the field. Called "Draftette," the precision instrument is now available attached to a portable drawing board that fits easily into a briefcase. The unit takes the place of T-square, ruler, protractor and triangles. "Draftette" is of all aluminum construction.

MOTO BUG — Item 34

Ability to carry 3,000 lbs. in an 18 cu. ft. hopper or when used as a platform carrier is one of the many features incorporated in the new Kwik-Mix "Moto-Bug." As a forklift (at 15 in. load center) the new model will raise 1500 lb. to 7 ft. Operator can tilt the forklift mast 10 degrees back—2 degrees forward. Carrying a full load, it can climb a 25 per cent grade.

REMOVES BEARINGS — Item 35

A unique new truck, specifically engineered for removal of bearings from the ends of steel mill rolls, has been developed by the Elwell-Parker Electric Company. The truck performs four basic functions: removal of couplings, removal of bearing chocks, replacement of bearing chocks on reground work rolls, and replacement of couplings.



MOLDING COMPOUND — Item 36

Speedi-set plastic, a single component thermo-setting flexible plastic molding compound for casting cold setting ceramics and plastics, is now available. Speedi-set is premixed and available in one gallon containers, ready for use in liquid form. The material is poured over a suitable pattern, usually made of machined aluminum, and then cured at 270 deg. F. for about one hour. The resultant mold offers an accurate close tolerance negative of the machined pattern.

PAPER PRESERVER — Item 37

New Apeco "Ply-On" Laminator completely encases either or both sides of important business papers, drawings or cards with thin, pliable sheets of transparent plastic film. The lamination coating preserves, protects and beautifies the original copy. It is the first automatic desk-top office machine designed to be used in business offices by office personnel.

ELECTRIC LEAD POINTER — Item 38

A new type of lead and compass pointer for engineers and draftsmen priced less than comparable units, has been announced. Named "Point Perfect," it sharpens leads instantly using only one hand. Specifically for clutch lead type pencils, and compasses. A slight touch of the lead against the cutters trips an electric switch which operates the unit as long as the lead is pressed among the cutters. The unit instantly points lead to a twelve degree included angle.

ROTARY DRILL — Item 39

The recently developed Winkie Diamond Drill is announced as weighing 37 pounds and having depth capacities up to 200 feet. The drill has rated capacities for core diameters up to six inches. Among the unit's applications are marine drilling, rock and concrete coring, blast hole drilling and soils sounding. Economic advantages include fuel consumption neighboring two gallons per shift.

American Engineer

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"Christmas! Bah! Humbug!"

The man in the wheel chair leaned into the microphone. "Christmas!" he snarled. "Bah! Humbug!" And, as they had in Christmases past, millions of young listeners chilled at the mental picture of the baleful Scrooge.

It was a Christmas institution, back in the Forties, this annual reading of Charles Dickens' classic. Its reader was something of an institution himself. In his turbulent lifetime he had been an unsuccessful painter but a good amateur second-baseman, a composer whose music was played by the New York Philharmonic, and a model for Frederick Remington.

To most people, though, he was Lionel Barrymore, the actor, and they loved him.

He was both crusty and kindly (he loved reading "A Christmas Carol"), adventurous, stubbornly independent in thought and outlook. And game as they come. Although an accident in 1936 imprisoned him in a wheel chair, he went resolutely on—working in motion pictures and making public appearances for nearly twenty years more.

No question but that Lionel Barrymore was one-of-a-kind. Yet the qualities so richly combined in him exist in a large measure among all the 170 million of us who call ourselves Americans.

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